Health Information Technology Exchange of Connecticut Strategic Plan

Connecticut Department of Public Health
Commissioner
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Executive Summary

The Connecticut Department of Public Health (DPH) is the lead health information exchange organization for the state. DPH serves as advocate, regulator, and consumer of health information technology and exchange to serve public health and healthcare needs in Connecticut. In June 2009, DPH published the Connecticut State Health Information Technology Plan to set the agenda for healthcare information exchange and technology. By the end of 2009, DPH worked with the U. S. Department of Health and Human Services Office of the National Coordinator (ONC) to secure $7.29 million for a multi-year Cooperative Agreement for planning and building a coordinated, sustainable statewide health information exchange system for Connecticut.

As the state designated entity and per legislation, DPH established the Health Information Technology and Exchange Advisory Committee (HITEAC), which also consists of a broad array of health care stakeholders, to provide advice and guidance for the initial planning and coordinating activities of the Statewide HIE. The HITEAC, along with input from its subcommittees for Finance, Technical Infrastructure, Business and Technical Operations, Legal / Policy and Special Health Services, held a number of public meetings to discuss, draft, and refine the contents of this Strategic Plan. The intent of this Strategic Plan is as follows:

- To describe the current state of health information technology adoption within the State, including Electronic Health Records (EHRs) and Health Information Exchange.

- To identify the interdependencies and coordination points between the HIE initiative and existing and planned Medicaid, Medicare, federally-funded, and other state-based health programs.

- To define the Statewide HIE strategies across the ONC required domains: Governance, Finance, Technical Infrastructure, Business and Technical Operations, and Legal / Policy.

Legislation passed in May creates the Health Information Technology Exchange of Connecticut (HITE-CT), a quasi-public authority managed by an appointed board of directors to coordinate and oversee Health Information Exchange (HIE) activities for the State.

The vision for the HITE-CT as defined by the HITEAC for this Strategic Plan is as follows:

The State of Connecticut plans to transform its health care system by HITE-CT to improve the quality, efficiency and accountability of health care in Connecticut.

HITE-CT will establish and manage a statewide health information exchange to attain substantial and measurable improvements in several key areas including but not limited to:

- *Patient access to health care and their medical records*

- *Continuity and coordination of care*

- *Quality of care, medical outcomes and patient experience*

- *Effectiveness and efficiency of health care delivery*

- *Public health outcomes*

The vision for the HITE-CT is to facilitate secure health information exchange across the care continuum that supports patients' health needs at the point of treatment by providing immediate, direct and on-going links between patients, their complete health records and their attending providers.

Connecticut plans to continue to build on its HIT foundation and work closely with the State's private and public health community to achieve its vision. This Strategic Plan, aligned with the ONC's five domains for an HIE (Governance; Finance; Technical Infrastructure; Business and Technical Operations; and Legal / Policy) provides an assessment of the capabilities and challenges for the development and implementation of an HIE for Connecticut and a roadmap for success. The following table provides a summary of each of the five domains.

Domains	Summary

Governance	• **HITE-CT Legislation**
	  o An interim governance structure has been established under the leadership of DPH and a transition is planned to occur starting with the first HITE-CT board meeting in October followed by a complete hand-over of responsibilities from DPH to HITE-CT in the beginning of January 2011.
	
	• **Roles of Governance**
	
	  o The founding principles of HITE-CT include ensuring the clarity of decision making **processes**, inclusiveness, and that those organizations that will support HITE-CT must be provided a voice in governing HITE-CT.
	
	• **Quasi-public Authority**
	
	  o The long-term governance of HITE-CT will be completed by an Authority that will reflect the interests or all stakeholders and ensure the efficient and effective management of the HIE utility.
	
	• **Accountability and Transparency**
	
	  o HITE-CT must be governed and operated in a clear and accountable manner to **ensure** stakeholder support and that the promise of health information exchange is realized in Connecticut. This will mean meeting, and going above and beyond, all State and Federal reporting requirements.

Finance	• **Value Proposition**
	  o There is a broad agreement among HITE-CT stakeholders that there needs to be a compelling value proposition for the HIE that sets realistic expectations and that is articulated in both qualitative and quantitative benefits. This value proposition must demonstrate economic and health outcome-specific benefits, include performance indicators for reporting requirements and most importantly, enable tailoring of communication around the value of the HIE to each stakeholder group.
	
	• **Short-Term Start-Up Funding**
	  o Connecticut is considering the establishment of a two-stage approach to funding. Stage 1 (start-up funding) consists of leveraging the State HIE cooperative agreement grant to help set the foundation necessary to get the HITE-CT initiative moving

Domains	Summary

	forward along with possibly limited funds from subscriptions. In addition, HITE-CT will make a priority to identify the required matching funding for the cooperative agreement is available along with other short-term funding sources as required.
	• **Long-term Sustainability**
	   o Connecticut's Stage 2 approach to funding consists of conducting a careful evaluation of different long-term funding options for HITE-CT operations that may require various combinations of legislative mandates and voluntary participation by stakeholders. These potential revenue sources include continuation of direct funding from sponsoring government and/or charges, fees, and/or payments based on the actual utilization of HITE-CT by participants.
	• **Financial Management and Reporting**
	   o HITE-CT must be able to meet all reporting requirements and especially those additional requirements for ARRA funding. HITE-CT must be able to demonstrate to all of its stakeholders the realization of the value proposition of the HIE and a positive cost-benefit analysis.

Technical Infrastructure	• **Solution Architecture**
	
	   o HITE-CT will lead a broadly participative effort to define a comprehensive enterprise architecture.
	
	   o HITE-CT will acquire a Service-Oriented Architecture (SOA) and standards-based, secure, feature-rich application that will enable providers to achieve meaningful use of EHRs.
	
	   o This solution will require a scalable technical platform and network capable of working with all providers, hospitals, and other care settings in the State.
	
	• **HITE-CT Products and Services**
	
	   o Connecticut has determined the initial prioritization of HITE-CT products and services as guidance for the operational planning process in three Releases:
	
	   o **Release 1 - Continuity of Care Documents (CCDs) and Public Health Registries and Reporting**, to address components of meaningful use, provide benefits to all State residents and build a foundational infrastructure and data set.
	
	   o **Release 2 – Quality/Gaps in Care Reporting**, to develop and implement metric-based Quality Reporting and the "care gaps" and provide access to and integration with data from multiple sources.
	
	   o **Release 3 - Personal Health Records (PHRs)**, to allow all residents the ability to help manage their own care through the management of their health records.
	
	• **Standards**

Domains	Summary
	o The nature of the solution will require numerous interfaces to inpatient and ambulatory EHR products, hospital clinical information systems, laboratory systems, and other clinical and State agency systems. HITE-CT will take a leadership role in Connecticut in using and encouraging the use of standards for interoperability, privacy and security. • **HIT and HIE Adoption** o HITE-CT will collaborate with the eHealthCT as the Regional Extension Center (REC) to encourage and support the adoption of EHRs/EMRs and the HIE.
Business and Technical Operations	• **Deployment Strategy for HITE-CT** o Connecticut will create an incremental approach to deploying HITE-CT products and services with an initial focus on ensuring that the HIE can support meaningful use requirements. HITE-CT will work closely with stakeholders to develop a detailed deployment approach that will use the experiences and, where possible, assets of early adopters to ensure a successful deployment of products and services across Connecticut. • **HITE-CT Communications Strategy** o HITE-CT will create a detailed communications strategy designed to educate consumers and providers about how electronic records and electronic record exchange can improve the quality and efficiency of health care for Connecticut residents. This communication strategy will take advantage of multiple communications methods to inform the public of HITE-CT and its benefits. • **HITE-CT Technical Implementation Approach** o Deployment Planning o HITE-CT will develop a technical deployment plan that will ensure that the right technologies and services are developed, deployed and eventually maintained to high standards. o Infrastructure Procurement Strategy o HITE-CT will plan for an open procurement strategy for the acquisition of HITE-CT infrastructure as an immediate priority. Technical deployment will be achieved by a combination of HITE-CT and vendor resources. o HITE-CT will plan to select a vendor with a proven HIE product who can ensure that Connecticut health care providers are able to qualify for Medicare and Medicaid incentive funding.
Legal/Policy	• Privacy and Security is a High-Priority for the HITE-CT o The privacy and security of patient health information is of the highest possible concern in the development of HITE-CT as

Domains	Summary
	reflected in Connecticut's Public Act 10-117.
	o The Legal / Policy Sub-committee is conducting a thorough analysis of procedures and standards for ensuring the privacy of patient data.
	• HITE-CT Policies, Rules and Trust Agreements
	o The policies, rules and agreements that will define how HITE-CT operates must be created within the boundaries of all applicable law and national standards. Of particular importance will be determining the method of patient consent. The HITE-CT plans to review and leverage the work done by eHealthCT in crafting the privacy and consent policies and trust agreements for the DSS HIE Pilot.
	• Enforcement Framework
	o HHS Privacy and Security framework and HIPAA provides a well established existing body of law for HITE-CT. The HIPAA preemption analysis, which is currently being updated in light of HIE needs, will provide input for a future framework for HITE-CT.

After the formal commencement of the HITE-CT in January 2011, HITE-CT is planning an aggressive integration and rollout schedule with three releases in three years. The proposed strategic schedule is shown below and will be further refined with a detailed work plan in the forthcoming Operational Plan.
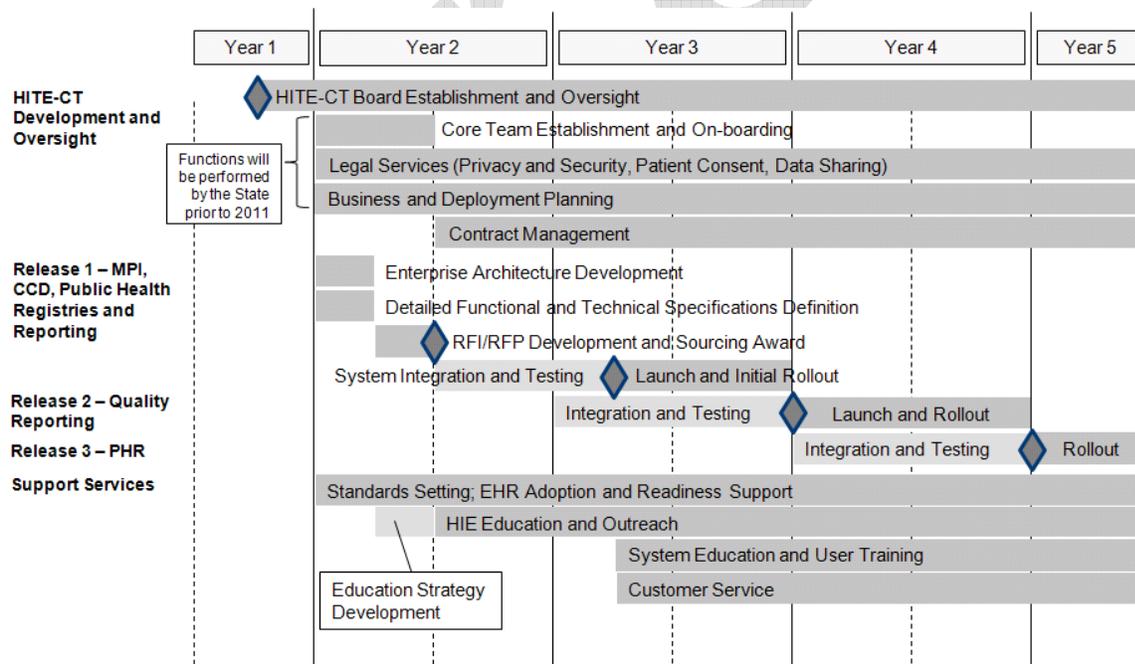
Both the Strategic Plan and the Operational Plan will be made available for public / open review and comment before finalization and submission to the ONC. It is the expectation of the State

and the HITEAC that the details of both the Strategic and Operation Plans will set the HITE-CT on the proper path for achieving the vision of transforming the health care system within Connecticut by improving the quality, efficiency, and accountability of health care within the State.

1.0   Introduction

The Connecticut Department of Public Health (DPH) is the lead health information exchange organization for the State. DPH serves as advocate, regulator, and consumer of health information technology and exchange to serve public health and healthcare needs in Connecticut. In June 2009, DPH published the Connecticut State Health Information Technology Plan to set the agenda for healthcare information exchange and technology. By the end of 2009, DPH worked with the U. S. Department of Health and Human Services Office of the National Coordinator (ONC) to secure $7.29 million for a multi-year Cooperative Agreement for planning and building a coordinated, sustainable statewide health information exchange system for Connecticut.

The American Recovery and Reinvestment Act (ARRA) signed by the President on February 17, 2009, includes the Health Information Technology for Economic and Clinical Health Act of 2009 (the HITECH Act) that sets forth a plan for advancing the appropriate use of health information technology to improve quality of care and establish a foundation for health care reform. The Act commits more than $48 billion1 in grants, loans and incentives to encourage 'meaningful use' of health IT in a secure technology environment including an incentive framework for eligible medical providers. Connecticut is well position to respond to ARRA.

In May the Connecticut General Assembly passed the Public Act No.10-117, "An Act Concerning Revisions to Public Health Related Statues and the Establishment of the Health Information Technology Exchange of Connecticut" under Senate Bill No. 428 (see Appendix 12.6). The Act creates the Health Information Technology Exchange of Connecticut (HITE-CT), a quasi-public authority managed by an appointed board of directors to coordinate and oversee Health Information Exchange (HIE) activities for the State. The members of the board will include key Connecticut stakeholders representing health care providers, medical researchers, academia, payers, employers, attorneys, state agencies, consumers and consumer advocates.

On January 1, 2011, HITE-CT will become the lead health information exchange organization for the State. In addition to the funds through the Cooperative Agreement with the Office of National Coordinator (ONC), HITE-CT will seek other public and private funds for the development and operation of Connecticut's health information exchange and will be responsible for the implementation and periodic revisions of this Strategic Plan. HITE-CT will, through the HIE initiative, help to realize Connecticut's plans to transform its health care system to improve the quality, efficiency and accountability of health care in the State.

1.1 Strategic Plan Purpose and Audience

The HITE-CT Strategic Plan builds upon the strategies defined in the Connecticut State Health Information Technology Plan that was published by the Department of Public Health in June 2009 and the significant contributions the State has facilitated with multiple stakeholders.

This Strategic Plan responds both to the requirements identified in the State's planning process and the requirements outlined by the U.S. Department of Health and Human Services ONC in its "State Health Information Exchange Cooperative Agreement Program." In addition, the plan reflects national trends and marketplace solutions to ensure the State's readiness and the leadership support required for the success of the HIE initiative. One of the core goals of the

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[1] See estimate released May 2009 by the U.S. Department of Health and Human Services, available at http://www.hhs.gov/recovery/index.html. This includes an estimated $46.8 billion in Medicare and Medicaid electronic health record incentive payment funding and $2 billion to be distributed through the Office of the National Coordinator in a series of grants, loans, and technical assistance programs designed to support provider EHR use and to spur health information exchange

Statewide HIE is to enable Connecticut's eligible Medicaid and Medicare providers to demonstrate 'meaningful use' through the Cooperative Agreement Program and receive the maximum incentive reimbursement while avoiding future reimbursement penalties.

The Strategic plan also provides the foundation for the HITE-CT Operational Plan that will describe the set of activities essential for the design, development and deployment of the statewide HIE. Connecticut is forecasting the completion of the Operational Plan by August 2010.

HITE-CT aims to link public health organizations and the State's health care community to bring together respective strengths and best practices to achieve shared benefits. Therefore, in addition to ONC, the intended audience for the HITE-CT Strategic Plan includes multiple stakeholders:

- The residents of Connecticut who will benefit from the implementation of the HIE, including consumer advocacy groups

- The Health Information Technology and Exchange Advisory Committee, transitioning to the HITE-CT Board of Directors

- State agencies and public health entities

- All health care providers including community-based health systems, hospitals, clinics

- Employers and health insurance entities

- The Connecticut Regional Extension Center (REC), assigned to eHealthCT

- Local health information organizations

- Professional associations

- Academic institutions

- Future vendors who may be engaged to support the execution / implementation of the Strategic Plan roadmap activities

1.2 Strategic Plan Outline

The Strategic Plan focuses on the State's vision, readiness and direction for the Statewide HIE. The Operational Plan will detail the planned actions for fulfilling the State's vision for the HIE. The outline for the HITE-CT Strategic Plan, consistent with the ONC requirements for the Cooperative Agreement, includes:

- Section 2, "HITE-CT Vision, Goals and Strategic Imperatives" which summarizes the HITE-CT's overarching vision

- Section 3, The "Environmental Scan" which summarizes Connecticut's current HIT adoption and government/public health systems and describes the HIE initiatives in operations or in planning phase in the State as well as the level of adoption of HIT

- Section 4, "Coordination with State and Federal Programs" that describes the HITE-CT's current/planned interactions and ongoing coordination with multiple State and federal organizations and programs including: the state's Medicaid agency (the Department of Social Services), State Department of Public Health, Medicare, relevant federally funded state based programs, federal care delivery organizations and other ARRA programs

- Sections 5 through 9, "Governance", "Finance," "Technical Infrastructure," "Business and Technical Operations," and "Legal / Policy" that present a more detailed description of the current state and strategic initiatives for each of the ONC's HIE domains

- Section 10, "Evaluation Approach," which provides guidance on the work that needs to be done to define the measures and mechanisms that will be used to assess the near term effects and systemic impact of HITE-CT's development effort

- Section 11, "HITE-CT Strategic Plan Roadmap and Recommendations," which provides a high-level project plan for the HIE initiative and summarizes the next steps for addressing existing gaps, and for finalizing this Strategic Plan

1.3 Methodologies Employed

Over the course of four months, from March 2010 to June 2010, the State guided an open, inclusive, and transparent strategic planning effort. This planning effort consisted of a five step methodology. The first critical step was to focus on establishing a specific framework for Connecticut organized around the definition and scope of the five ONC HIE domains[1].

Based upon this HIE domain framework, the next key steps were to identify the current capabilities in Connecticut that can be leveraged and the existing gaps and challenges that must be addressed to move forward with the Statewide HIE. The fourth and fifth steps consisted of defining a set of alternatives for closing the gaps in each domain, and documenting the potential strategies and next steps. The planning process included:

- Review of ONC's Guidance on State Health Information Exchange Cooperative Agreement Program

- Review of documentation relevant to the State's HIE Initiative from State agencies and other stakeholders

- Meetings with the HITEAC and diverse stakeholders from the public to obtain their input and guidance

- An environmental scan of the existing Statewide infrastructure and Electronic Health Records (EHR) / Electronic Medical Records (EMR) systems in place or planned to assess the level of Health Information Technology (HIT) adoption and potential use of the HIE

- Applied current research, best practices and lessons learned from other HIE implementations in support of the development of the draft Strategic Plan and Roadmap for the five domains

- Definition of Connecticut's HIE vision and goals reflecting agreement among the State's stakeholders and striving for Statewide coverage of providers for HIE meaningful use criteria

- Development of several reports that summarize Connecticut's leveragability of current initiatives, existing gaps, alternatives analysis, the process for prioritization of viable alternatives and "go forward" recommendations for Connecticut's HIE

A key component of the HITE-CT initiative focuses on the solicitation of input, concerns and recommendations from key stakeholders. Therefore, the HITE-CT Strategic Plan will undergo a period of public comment that will result in revisions to capture input from the community to support the finalization of agreed-upon strategies required to ensure the success of the vision for the HITE-CT.

2.0 HITE-CT Vision, Goals and Strategic Imperatives

2.1 Vision Statement

The State of Connecticut plans to transform its health care system through the HITE-CT to improve the quality, efficiency and accountability of health care in Connecticut.

HITE-CT will establish and manage a Statewide health information exchange to attain substantial and measurable improvements in several key areas including but not limited to:

- Patient access to health care and their medical records

- Continuity and coordination of care

- Quality of care, medical outcomes and patient experience

- Effectiveness and efficiency of health care delivery

- Public health outcomes

> **The vision for the HITE-CT is to facilitate secure health information exchange across the care continuum that supports patients' health needs at the point of treatment by providing immediate, direct and on-going links between patients, their complete health records and their attending providers.**

2.2 Strategic Goals and Principles

To achieve the vision for the HITE-CT, Connecticut has established the following goals:

- Demonstrate leadership by fostering communication and coordination between and among HIE stakeholders particularly state agencies and consumers.

- Demonstrate leadership with open communication and coordination among HIE stakeholders, including state agencies, consumers, payers, and providers.

- Move towards patient-centricity in health care where longitudinal patient care is enabled by readily available access to necessary information across care settings

- Promote the optimal use of health information to improve continuity of care enabling coordinated, affordable and efficient health care by providing rapid access to patient health care information from multiple providers

- Strengthen current and future Connecticut health care initiatives to improve clinical outcomes, improve patient safety, minimize medical errors and reduce redundancies and duplication of testing and services by linking the full continuum of providers in the State and across State borders – public, private providers and pharmacies, clinics, labs and medical facilities

- Improve access to quality health care services for under-served populations by strengthening the provision of health care through HIE and telehealth

- Empower consumers' active participation in their health care needs through channels of engagement, provision of educational information and ready access to their health care information in an understandable format

- Provide open and bi-directional information exchange between the participants in the entire network supporting patients and providers including health systems, hospitals, payers, pharmacies and laboratories regardless of location or affiliation

- Ensure all patient health information sharing is compliant with all applicable privacy and security standards

- Facilitate improved public health services by providing health data for mandatory reporting, monitoring of health status, and emergency responder information to DPH and Federal agencies

- Encourage the adoption of health information technologies, i.e., electronic health records systems in Connecticut by making it easier and less costly to securely share information over Statewide and regional electronic networks

- Provide a gateway for appropriately sharing patient information through the Nationwide Health Information Network (NHIN) with other providers outside of Connecticut

- Facilitate public reporting of patient outcomes and quality measures by enabling communication of this information for meaningful use of health IT as may be required by the ONC

The following Principles have informed, and will continue to inform, the strategic planning process and will provide critical guidance for the Operational Plan:

- **Consumer Confidence** – Connecticut health care consumers must be continuously confident that their personal health information is secure and used appropriately

- **Foundational and Sustainable Infrastructure** – The HITE-CT does not stand alone - it is one of a number of important tools for improving the landscape of health care in the State. HITE-CT infrastructure will lead standards-based interoperability and provide robust and resilient access to CT health information

- **Phased Implementation** – The State will maximize investment through strategic planning and phased implementation of the HIE

- **Inclusive and Transparent Governance and Approach** – The HITE-CT will support the entire health care community and will demonstrate sustained commitment to all health care constituents in the State –

  o HITE-CT will maintain representative, qualified and stable leadership across the full spectrum of health care stakeholders in the State through broad-based stakeholder input and collaboration with full transparency, openness and trust.

  o HITE-CT and its associated governance structure will provide guidance and support to local and regional health information exchange initiatives.

  o HITE-CT will coordinate and align its efforts in support of State Medicaid and public health requirements for health information exchange and with the evolving Federal meaningful use criteria.

2.3   HITE-CT Strategic Approach

Connecticut's strategy is to provide the HITE-CT as a full service, secure, accessible, patient-centered health information exchange aligned with the Vision and Strategic Goals for the State's HIE. The HITE-CT will initially prioritize support for all Connecticut's health care providers'

meaningful use EMR/EHR requirements in close alignment with the State Medicaid Health IT plan.

Full system functionality will be implemented in phases over a number of years. The HITE-CT will be built on an architectural foundation that will enable an incremental approach towards building a coherent and comprehensive capability for the HIE. The phased implementation approach must balance:

- Priorities related to achieving all aspects of "meaningful use" for Medicaid and Medicare providers

- Widely varying HIT adoption levels and rates of change across Connecticut's providers

- Leveraging existing State and local HIE capacity and Statewide shared services and directories

- Improving consumers' access to medical services and their health records

- Support of public health and vital statistics data needs

- Enabling data aggregation and analytics to improve health care quality and outcomes in Connecticut

As illustrated in Figure 1, the vision for the full implementation of the State's HIE provides a multitude of services and capabilities and supports a very high proportion of Connecticut's health care system linking public and private systems for effective and efficient use of information and technology.

Figure 1. HITE-CT Vision: Linking Private and Public Health Care
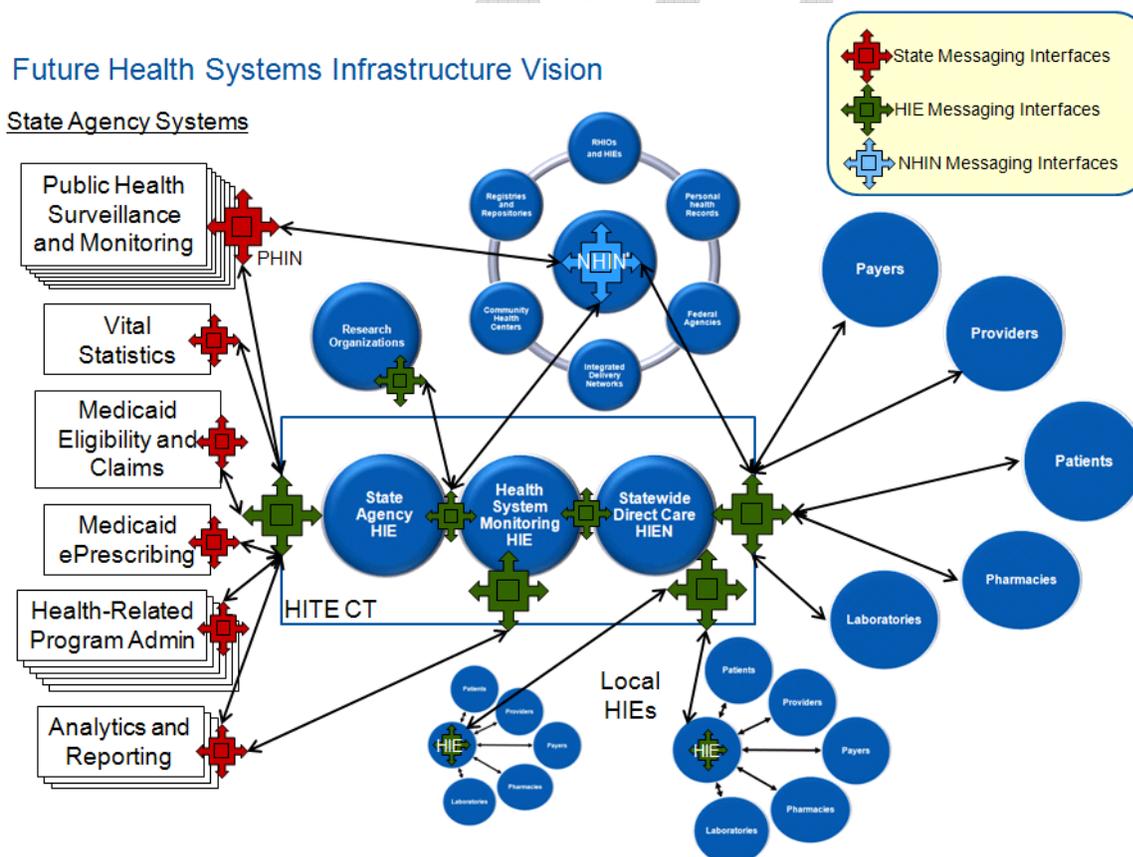
Connecticut's strategy is to provide all of the following services either directly or via a local information exchange:

- Shared directories for patients and health care / service providers for:

    o Patient matching

    o Provider authentication

    o Consent management

    o Secure routing

- Clinical summary exchange for care coordination and patient engagement

- Electronic public health registries and reporting

- Health care quality reporting

- Advance directives

- Messaging between participants

- Prescription fill status and/or medication fill history

- Electronic prescribing and refill requests

- Electronic clinical ancillary services (including laboratory and radiology) ordering and results delivery

- Electronic eligibility and claims transactions

2.4   Strategic Imperatives

To aid in the planning for the capacity development and use of the HIE among all health care providers in Connecticut, the HITE-CT will support health care providers' efforts to become meaningful users of EHR/EMR's as an imperative along with other strategic imperatives for each of the five ONC HIE domains outlined below.

2.4.1   Governance Domain

- Establish a strong State leadership group to mobilize and solicit stakeholder support and to lead the HIE initiative

- Codify and create the HITE-CT

- Establish an open, transparent and accountable governance structure and related processes that achieves stakeholder collaboration, buy-in and trust

- Align with future nationwide HIE governance

- Ensure private and public sector participation and partnership and define their roles

- Develop a solid value proposition for providers to encourage active HIE participation and adoption

- Promote the importance of electronic health record readiness

- Solicit broad participant (including patients and consumers) engagement and establish mechanisms for the exchange of ideas and for providing education

- Establish mechanisms to provide oversight and accountability of the HIE once established

- Establish the HITE-CT as a "safe harbor" and incubator for current initiatives that can be leveraged for new initiatives and interactions as well, to be supported by the HIE to ensure long-term sustainability of the HIE over time and political changes

2.4.2 Finance Domain

- Minimize the impact of costs for the provider community to promote participation

- Minimize the burden on tax payers from the support of the HITE-CT

- Identify all viable avenues for financing the HITE-CT across all stakeholders and ensure that all who benefit will help financially contribute to the support of the HIE. Stakeholders include:
    - Health care providers
    - Payers
    - Patient engagement and information service providers
    - Federal government - ONC, Centers for Medicare and Medicaid Services (CMS), Center for Disease Control (CDC)
    - State government – DPH, Department of Social Services (DSS) and other health and human services agencies

- Create a sustainable business model (including consideration of public/private financing mechanisms) for the HITE-CT to be executed after implementation of the required infrastructure for the HIE utility

- Develop a plan for sustainable funding in the short (1-2 years), medium (3-5 years) and long-term (5+ years) that will provide broad-based and evolving revenue sources that are in line with the development of the HITE-CT

- Establish mechanisms to effectively manage the funding and provide for the required reporting, accountability and controls necessary to implement and manage the HITE-CT

- Ensure revenue sources can only be used to support the HIE

- Leverage existing State funding mechanisms for the collection of revenue.

2.4.3 Technical Infrastructure Domain

- Leverage, where possible, existing State and public efforts and resources that exists to support the vision for HITE-CT, for example:
    - Master patient/client indexes
    - Public health registries and support systems and compliance with the nationwide Public Health Information Network (PHIN)
    - Current and planned health information organization and other HIE and HIE-like systems in place in Connecticut
    - State Medicaid HIT Planning efforts
    - State Medicaid Management Information System (MMIS)

- Establish an architecture for the State's HIE best suited to the State, local and regional characteristics that complies with national interoperability, information exchange, security and other standards that support the HIT efforts, and the soon to be defined Federal meaningful use requirements

- Identify existing HIE mechanisms that are scalable and will ultimately enable full interoperability and exchange of health information consistent with the State's Strategic Plan

- Consider hosted solutions for all or part of the HIE solution requirements

- Integrate with the Nationwide Health Information Network (NHIN) and the CMS CONNECT gateway

2.4.4   Business and Technical Operations Domain

- Ensure strong planning and project management through a Project Management Office (PMO), service level management and business support for the HITE-CT

- Create an effective organizational approach to managing the HITE-CT and its policy development, stakeholder participation and governance mechanisms to support the vision for the HIE

- Establish the mechanisms and processes for coordinating and aligning efforts to incrementally meet meaningful use requirements, Medicaid incentive program needs and public health registries and reporting requirements

- Develop approaches for utilizing HIE resources for academic research and analytics to assist in efforts to promote improved health care practices and outcomes across Connecticut

- Establish the metrics, internal controls and reporting capabilities necessary to meet ONC reporting requirements for the HITE-CT

- Provide technical assistance to other health information organizations and other current and planned HIE or HIE-like efforts within the State

- Coordinate with the Regional Extension Center and support the provision of training and technical assistance in support of HIT adoption and effective use of Connecticut's HIE and other HIE and HIE-like systems within the State

2.4.5   Legal / Policy Domain

- Identify and harmonize Federal and State legal and policy requirements that enable appropriate health information exchange services

- Create the legal framework for patient and provider participation in health information exchange

- Establish a Statewide policy framework that allows for incremental and continuous development of information exchange policies

- Establish enforcement mechanisms to track and ensure Statewide stakeholder compliance with national adopted standards and all applicable policies for interoperability, privacy and security

3.0   Environmental Scan

3.1   Health Information Technology Adoption across Connecticut

As part of Connecticut's Strategic Planning process for HITE-CT, Connecticut completed a review of current HIT adoption in the State. This review included significant input from Federal government studies, independent society and association studies, and Connecticut studies documented in Appendix 12.7.

HIT Adoption Quick Facts

Hospitals and Health Systems

- Many of the 32 hospitals in Connecticut have the information technology adoption to support HIE activities in the State. 100% of responding hospitals (14 of 14) have functional EHR in place, or were in the process of implementing one.

Provider Practices

- Provider HIT adoption is fractured in Connecticut. In 2008, nearly 80% of practices had electronic billing systems, while only 26% had an EMR.

- Nationally, adoption is heavily skewed towards larger practices: Nationally, large practices have three times more adoption in any EMR system, and seven times more adoption in fully functional systems.

- Small practice adoption of fully functional systems is not expected to reach 15% by 2015.

Government Agencies

- Agencies have a large number of partially siloed systems:

    o DPH has 55 different databases that have been identified.

    o DSS has a portal for a single point of access to several different systems.

ePrescribing and Laboratories

- In 2008, only 23% of CT physicians reported use of ePrescribing and 63% reported having Electronic Labs functionality in their practice.

EMR Adoption

According to a 2008 study[2], Health Information Technology in Connecticut among providers has varying levels of adoption. Office technologies, including Practice Management Applications and Electronic Billing, are the two most utilized technologies with 63.5% and 77.5% adoption among practices, respectively. On the clinical side, Electronic Labs is the most utilized technology, with 63.0% practice adoption, however only 26% of practices use an Electronic Medical Record.

Figure 2. Percent of Connecticut physicians using various technologies in their practice: 2009[3]
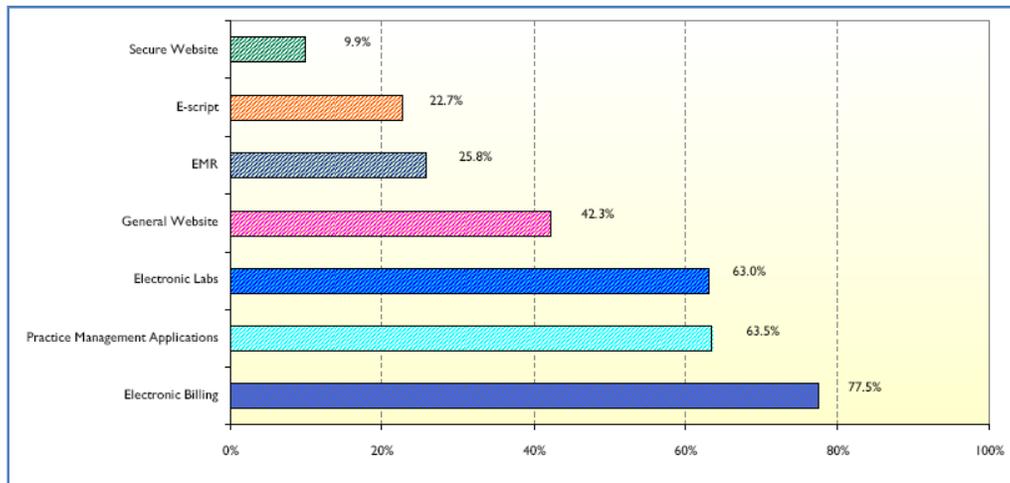
Figure 2 provides an overview of the State's physicians HIT adoption. Nationally, the CDC reports that HIT adoption is proportional to the number of providers in a practice. As shown in Figure 3, in 2007 solo practices showed only a 20% adoption rate of any EMR system (even with single-modal basic functionality) while practices of 11 or more reported an adoption rate over three times as high[4]. The dichotomy in fully functional systems is even more dramatic, with expectation of adoption is over seven times as high in large practices as solo practices.

Figure 3. National HIT Adoption by Office-based Physicians in the United States, by Practice Size: 2007[5]
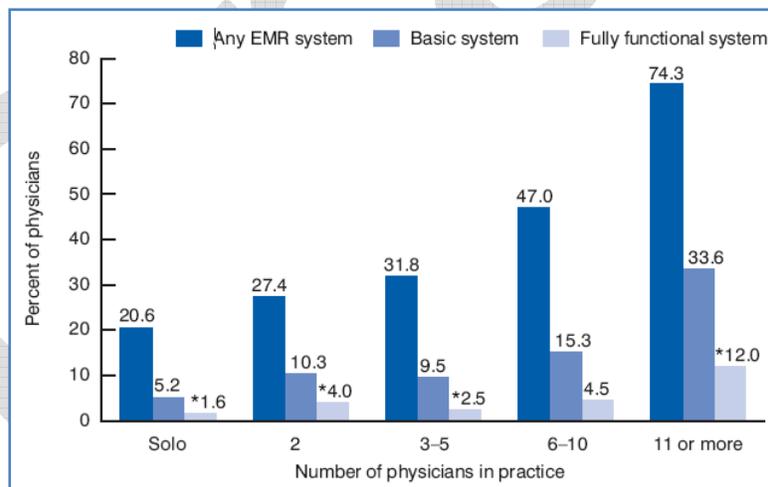
This adoption curve is expected as smaller practices are generally less able to make a jump financially to an EMR and therefore are less willing to take the risk of adoption. This dichotomy between practice sizes is likely to continue, even with governmental assistance. As Connecticut HIT adoption matches the national statistics well, these statistics are assumed to be true for the State.

Adoption rates have increased steadily for the past five years, though the rate of adoption will not yield a high overall adoption of HIT in the next few years, especially in small practices. In

2007, only 1 out of 3 physicians in small practices had any EMR system, while less than 12% had a basic systems and less than 4% had a fully functional system[6]. A projection of this trend, even with increased support from Federal funding, may not provide the desired adoption to effectively support a State HIE. Figure 4 describes past adoption metrics for limited to fully functional systems.

Figure 4. EMR Adoption by Office-based Physicians in the United States: 2001-2007[7]
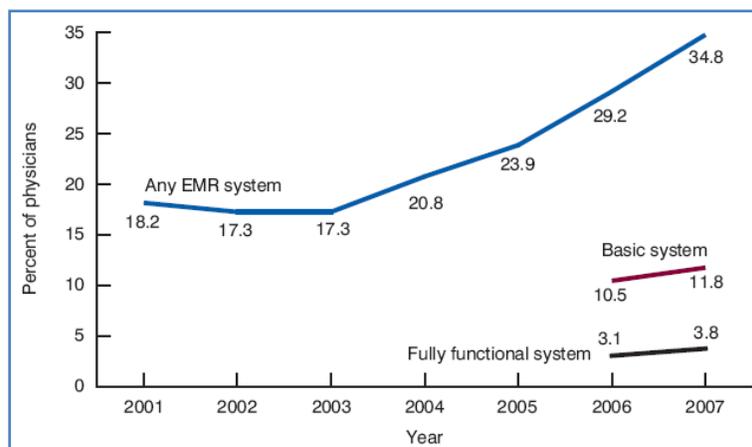
To help address this inconsistent adoption of HIT, in April 2010, eHealthCT was assigned as a REC for Connecticut, which includes a $5.75 million grant to promote HIT in the State. Through the efforts of the REC and the collaborative efforts of the HITE-CT, the inconsistent adoption of HIT within the State will be addressed to support providers' readiness and adoption.

In a study supporting the 2009 Connecticut State Health Information Technology Plan[8], 14 of 32 hospitals in the State responded. Of those, 13 had a functional Electronic Health Record system with the last in the process of implementing one. Of all 14 hospitals, all have electronic data interfaces in most departments, with the lowest concentration in Emergency and Acute Care departments.

Laboratory Systems

Lab exchange of data in hospitals responding to the survey showed that all had IT systems in laboratories and had interfaces available to communicate electronically outside the laboratories, all but one had this functionality as part of their EMR/EHR, but fewer than half (6 of 14) shared data with outside laboratories.

A New England Journal of Medicine (NEJM) study showed that 77% of hospitals nationally had the ability to view lab results electronically, however only 20% could order lab tests electronically[9]. A 2007 American Hospital Association (AHA) study showed similar results viewing statistics, though over 70% demonstrated implementation of lab order entry[10].

Physicians as a whole, however, have a relatively high level of adoption of lab reporting usage, with 63% reporting use of Electronic Labs technologies in their practices[11]. Nationally, the capability to view lab results electronically was reported by 44% of office-based physicians[12], suggesting that Connecticut is advanced in this area.

Though this functionality is one of the more adopted technologies among physicians and hospitals, full electronic ordering and viewing is still limited, and will likely trend with overall EMR adoption.

ePrescribing

Similarly to lab adoption and usage, 13 of 14 hospitals responding to the 2009 survey have pharmacy IT applications, 12 have pharmacy order functions built into their EMR/EHR (with the other two planning on implementing this functionality within 2-3 years), and all but two of those have pharmacy interfaces to communicate with other systems, but only one shares data with retail pharmacies.[13]

Physician practices report a low adoption rate as well, with only 23% reporting use of an E-script technology in their practice.[14] In 2009, DSS introduced its Medicaid ePrescribing system, which will likely serve to drive this adoption higher in applicable physician groups. This system is described in more detail later in this document.

Interoperability

The 2009 Connecticut hospital survey showed a dedication to providing access to providers currently or in the near-future, especially within the hospital setting, including on-site clinics (93 – 100%), though to a lesser degree outside the hospital environment, to off-site clinics, long-term and post-acute care facilities (57 – 93%)[15]. The 2007 national AHA study showed about half of hospitals shared data with others (53% in 2005 and 49% in 2006)[16].

A surprising point in this study is that though almost all have the capability to share data with other entities, relatively few actually do. The largest use is between the hospitals and laboratories, Connecticut State agencies and payers (43%, 50% and 57%, respectively). There is even less sharing of data with other health entities within the State.

Attitude Towards HIT

The 2009 Connecticut Hospital study queried hospitals as to the perceived barriers to adoption of EHRs and HIE. The two most significant barriers were the investment required and the lack of time and resources to complete the implementation. This matches statistics from the national 2007 AHA study, which added a discrepancy between more financially stable, urban and teaching hospitals and those with less stable finances, smaller and rural hospitals.

The AHA study also noted that although the financial burden is often solely on the hospital, much of the financial benefits from decreased need for repeat tests, lower readmission rates, and shorter lengths of stay are realized by the payer of health care.

In a 2008 Workforce Survey, a significant portion of physicians are contemplating leaving the State or the industry due to the environment within the State. Patient wait times and difficulty obtaining referrals are limiting the ability to access health care across the State and in some specialties the liability premiums are very burdensome. Given the clinical and process concerns that many providers in Connecticut have, HIT is comparatively a low priority[17].

Gartner analysts also suggest that, although HIT adoption is growing, it will not ubiquitous in the United States for some time, especially in small practices. They suggest the following two strategic planning assumptions:

"In the U.S., a broken health care payment system, physician rage, fears of productivity loss, concerns about usability and cost will continue to inhibit the adoption of EHRs in small physician practices."

> *"By 2015, despite the relaxation of Stark laws and the American Recovery and
> Reinvestment Act (ARRA) incentives, less than 15% of small U.S. physician
> practices will have implemented an EHR."[18]*

Combining all sources, Connecticut should assume that adoption of EMR/EHRs is growing and
will continue to grow, however, large-scale adoption should not be expected for several years,
especially for small practices and even with changes in legislation and the introduction of
incentives designed to increase these statistics.

Stakeholder Interactions in Connecticut

There are a variety of stakeholder groups in Connecticut that are aimed at achieving the same
ultimate goal, though through several complementary methods. Some of the groups within the
State include the HITEAC, the future HITE-CT board of directors, eHealthCT and others.

All of the entities that have interfaced with the HITEAC in the development of this Strategic Plan
have expressed interest in collaborating with and supporting the development of the State HIE.

HITEAC and HITE-CT

In July, 2009, Connecticut passed Public Act 09-232[19] to designate the Department of Public
Health as the leader for the HIE initiative in the State. Part of this bill established the HITEAC.
The HITEAC is an appointed board of 12 members across stakeholders in the State. The board
spans the breadth of the stakeholder constituencies, including State and local government,
hospitals, payers, community health centers, legal counsel and researchers. Most of the
members are also part of 6 sub-committees – one for each of the five ONC domains and one to
represent special populations in the State.

Of the twelve HITEAC seats available, ten are currently filled. The current members are listed
in Section 12.2.

The State is also creating State resources through legislation, including an Authority to execute
the HIE initiative through the creation of the HITE-CT. The State legislature has recently
passed Public Act 10-117. The Act establishes a quasi-public authority, the Health Information
Technology Exchange of Connecticut[20], with broad latitude to operate with emphasis on strong
oversight by a board of eighteen representatives, each appointed and representing a specific
stakeholder group. The board is very similar in construction to the HITEAC and the makeup of
which can be found in Appendix 12.2.

DSS

In 2007, DSS was awarded a Medicaid Transformation Grant to implement ePrescribing, a
Health Information Exchange (HIE) Pilot and a Comprehensive Active Medication Profile
(CAMP) project for the Connecticut Medicaid program. DSS, in collaboration with HP Enterprise
Services and Surescripts, implemented a statewide ePrescribing system with Connecticut's
Medicaid enrolled providers on October 14, 2009. DSS also teamed with the University of
Connecticut, School of Pharmacy and the Connecticut Pharmacist Association (CPA) to build a
Comprehensive Active Medication Profile (CAMP) for Medicaid patients.

DSS, in collaboration with eHealth Connecticut, has been working towards implementing a HIE
pilot with a targeted group of hospitals and federally qualified health centers. Many
stakeholders have contributed to the development of privacy and security requirements for the
HIE pilot, including:

- CT Health Policy Project
- Office of State Comptroller
- Trusted Medical
- Alcohol and Drug Recovery Centers, Inc.
- AARP, CT
- CT AIDS Resource Coalition
- Office of Healthcare Advocate
- CT Legal Services
- CT Center for a New Economy
- Hispanic Health Council
- CT Hospital Association

Connecticut Hospital Association (CHA)

The CHA convenes a CIO and a multi-disciplinary work group to bring together stakeholders from across the State to align projects and to encourage collaboration between them.

eHealthCT Board

eHealthCT is a non-profit organization established in 2006 with stakeholders across the health care industry. The group has three major projects: 1) A DSS HIE pilot through the Medicaid Transformation Grant with several State providers; 2) Quality Reporting and Improvement (Connecticut Health Quality Cooperative [CHQC]) project; and 3) Assignment as a REC for the State with funding from the ONC.

Connecticut Health Information Network (CHIN)

The University of Connection, in cooperation with several State agencies, has developed a data warehouse project to connect, and perform research with, several State databases. The effort allows identified data research for internal use, and has the ability to release de-identified data for outside research and commercial partners.

Aetna PHR

Aetna has launched a PHR for its members in Connecticut. The project gathers information that is available to the company, including claims data, lab results data and member-reported data and presents it to the member for review and control. It also provides members with reminders and opportunities for disease management programs, customized to the member. Aetna has been involved in the development of the State HIE and will be evaluating methods to use the HIE to augment the current offering.

Safety.Net Planning

The goal of Safety.Net Planning is to establish collaboration between providers to plan the implementation of EHR systems. Providers include the Ethel Donahue TRIPP Center (UConn Health Center), Asylum Hill Family Practice Center, Fair Haven Community Health Center, St. Francis Medical Center, Community Health Center, Inc., Generations Family Health Center, Hill Health Center, Community Health Center Association of Connecticut, Staywell Health Center

and the Burgdorf/Bank of America Health Center. The effort has been funded by the Connecticut Health Foundation.

3.2   Governmental/Public Health Activities in Connecticut

There are many systems in a number of State agencies containing a wide variety of health-related data that will be impacted by the HIE initiative. Several State agencies, including the Department of Public Health, the Department of Social Services (DSS), the Department of Children and Families (DCF), the Department of Developmental Services (DDS), the Department of Mental Health and Addiction Services (DMHAS) and the Department of Veterans Affairs (DVA); a number of inter-agency initiatives; and a variety of other departments in education, criminal justice, development, legislature, budgeting and others have health information systems that can leverage the HIE or be leveraged by other users of the Exchange.

Connecticut agency systems support a variety of services, including vital statistics, public health surveillance and monitoring and program administration. In program management, such as Medicaid and State Child Health Insurance Program (CHIP), Women, Infants and Children (WIC), Health Care Access and Behavioral Health, services such as eligibility, case management, payments and claims processing, analytics and reporting are all supported by HIT systems.

These systems are currently operating in silos due to their development being based on independent, program-focused funding with little or no planned interaction between the systems. As a result, the data collected is fractured in multiple databases and therefore very difficult and costly to integrate, aggregate and use beyond the original program purpose. Although there is State and Federal momentum to connect or consolidate these systems and to establish standards for the collection and use of these data, these systems will not be consolidated or connected in the near future without an HIE.

The State does has a variety of HIT systems that can leverage a HIE, given the development of interfaces and standard communication.   A brief description of some of the assets the State manages is listed in Appendix 12.3.

3.3   HIE Initiatives in Connecticut

There are several instances of HIE initiatives in Connecticut as well as other related efforts for sharing information between organizations. The projects range from offering external access to a central system, expanding rollout of a centralized system to aligned providers, to true disparate systems with interfaces and a centralized Master Patient Index (MPI). Some of the notable HIE initiatives at various stages of planning and implementation in Connecticut are summarized in this section.

HealthLink

Danbury Hospital, in cooperation with many of the area practices, laboratories and pharmacies, have developed a working HIE. The system now incorporates over 250 providers, 500 support staff and 500,000 patient records which equates to approximately one-third of the medical community in the area.

The HIE incorporates several services, including:

- HealthLink Print/Fax - Print/fax capabilities for providers who do not have electronic capabilities;

- HealthLink VHR - A Virtual Health Record (VHR); a migration from their legacy system which has 80-90% adoption;

- HealthLink eRx - ePrescribing, with a goal for 80% adoption by the end of 2010 and 100% by the end of 2011;

- HealthLink EMR - An Electronic Medical Record including an "EHR lite" offering;

- HealthLink EMR Connector - A last mile two-way task interface; and

- HealthLink Image Exchange - An imaging and reports repository exchange, which is expected to launch later in 2010.

Additional information regarding the HealthLink HIE is listed in Appendix 12.4.

Medicaid Transformation Project - A Health Information Exchange pilot through the Department of Social Services

Initially funded by a Medicaid Transformation Grant ($1.35M), the program aims to link Federally Qualified Health Centers (FQHCs), acute care hospitals, and private physicians within the State, and eventually connect the HIE and the National Health Information Network for continuity of care. This project is being run by eHealthCT and is being developed in three areas: New London, Hartford and Waterbury.

In the New London area, Laurence & Memorial Hospital is working with Community Health Centers, Inc. to connect their respective EMRs. This is expected to assist the transition of care between the local clinics and the hospital. In Hartford, Hartford Hospital and St. Francis Hospital are coordinating EMRs using Misys® open source software to develop a coordinated HIE. Both hospitals will benefit due to the overlap of patients between the two hospitals. In Waterbury, transition of care for pregnant women from the Staywell Community Health Center to Naugatuck Valley OBGYN is planned via the pilot.

Additional information regarding the DSS pilot is listed in Appendix 12.5.

Middlesex Hospital

Middlesex hospital, in coordination with local provider groups, pharmacies and laboratories, are attempting to create an HIE around the hospital's eClinicalWorks® implementation. The group has implemented the eClinicalWorks proprietary HIE software, eEHX, in an ongoing effort to exchange data amongst the local providers and support organizations.

Backus Hospital

The William W. Backus Hospital is creating a regional health HIE in eastern Connecticut. The hospital and its Medical Staff have been planning this exchange for over two years. Implementation started in January 2010 and pilot projects are expected to go live starting in October, 2010. The HIE is expected to support over 300 physicians in the area.

Charlotte Hungerford

Charlotte-Hungerford Hospital and upper Litchfield County physicians are currently reviewing various EMR, PM and HIE vendors, configurations and pricing models. This group has set aside considerable funds for this year to build an integrated community of providers sharing patient data and using hospital services (lab, radiology, referrals, etc.). The group is also looking at using the HIE to connect to a shared billing service.

They expect to conclude a market review of options and approve a configuration and operational plan in May/June 2010 timeframe and begin phasing in ambulatory EMR implementation and a functioning HIE configuration (with possible billing services) over the second half of 2010 and into 2011 as they collectively move towards meaningful use and clinical integration. The hospital is also expanding its in-house EMR and HIE capabilities to achieve meaningful use in 2011/2012.

3.4 Statewide HIE Readiness

Several efforts in Connecticut will be consolidated to support and document HIE readiness and development. First among these is the Cooperative Agreement between the Connecticut Department of Public Health and the federal Office of the National Coordinator for Health Information Technology (ONC), from which $7.29 million in capital has been secured to lay the groundwork for HIE readiness and development in Connecticut. Second, as the Regional Extension Center, e-Health CT Inc received $5.2 million from ONC to assist the overall adoption of EHRs in the State. These federal funds will be leveraged with existing state support, capital investments and operational funds of hospitals, physician groups, community health centers, and other healthcare providers to affect the entire health information exchange system in Connecticut.

The Connecticut General Assembly established the Health Information Technology Exchange of Connecticut as the State HIE authority to develop and sustain governance and operations of health information exchange well into the future.

Several local HIE-like initiatives to connect providers in a variety of State locales provide a foundation of connections and networks that can be leveraged by the State's HIE initiatives. Key stakeholders from these initiatives have been involved in the planning of the Statewide HIE. State, private and non-profit leaders have been in discussions in how best to leverage and integrate all of the initiatives and assets in a way to maximize the effectiveness of an exchange.

All of these efforts serve to provide the building blocks from which a Statewide HIE can develop. These efforts have strongly informed the Strategic Plan and will be the inherent structure of a well-formed exchange of information.

3.5 Environmental Scan Summary

- **Health Information Technology Adoption across Connecticut**

  o Information Technology is increasing in hospitals and in provider settings in Connecticut, though the rate of adoption is slow, and is heavily skewed towards larger practices. Recent developments, such as the assignment of eHealthCT as a REC for the State will increase adoption in smaller practices.

- **Governmental/Public Health Activities in Connecticut**

  o Many information systems are established in State agencies, though most were developed independently based on different funding sources and do not have direct interfaces. DSS has made progress with consolidating system interfaces in Connecticut Medical Assistance Programs, with a portal that allows for real-time claim submission, provider enrollment, authorization inquiries, claims submission and status, client eligibility verification, and other self-service features.

- **HIE Initiatives in Connecticut**

  o Several HIE and HIE-like initiatives in the State are either active or will be active shortly. Danbury hospital and surrounding providers and business have a well-developed HIE that is a paradigm of HIE success; eHealthCT, with hospitals and providers in Hartford, Waterbury and New London, are piloting systems currently. Other hospitals, such as Middlesex Hospital and Backus Hospital are developing systems and hope to launch service this year.

- **Statewide HIE Readiness**

  o Several pieces of HIT and HIEs, and the administrative and legislative activities that support them are present in Connecticut, which provides a solid foundation for the State's development of a Statewide HIE. The adoption of HIT in provider and hospital settings varies significantly. Providers and hospitals in larger practices, in urban areas and in teaching roles have better adoption than their counterparts/

  o State agencies employ many systems and databases, though most are varied and not interconnected. Agencies with the most public systems and information are aware of the HIE initiative and are ready to collaborate with DPH and the Authority.

  o Several hospitals, clinics and provider groups have developed HIEs or HIE-like systems, or are in the process of doing so. These will provide a strong base for the development of a Statewide HIE.

  o There has been, and continues to be significant legislative and administrative effort behind the development of HIEs in Connecticut. The development of the HITEAC and the HITE-CT are legislative actions with State and volunteer support. eHealthCT has also made great strides in bringing stakeholders together and starting pilots in several areas in collaboration with DSS focusing on HIT adoption.

  o All of these efforts are the building blocks on which a Statewide HIE can be built. Although a Statewide HIE in Connecticut will not be immediately effective for health care stakeholders in the State, preparation is undoubtedly moving steadily in the right direction.

4.0 Coordination with State and Federal Programs

4.1 Medicaid Coordination

The Department of Social Services Medical Care Administration is currently seeking approval of its Planning-Advance Planning Document (P-APD) from the Centers for Medicare and Medicaid Services in order to proceed with the development of Connecticut's State Medicaid HIT Plan (SMHP). It is DSS's intention that the State Medicaid HIT Plan will align with and exercise opportunities for economy and efficiency with Connecticut's HIE efforts; support provider adoption, including technical assistance and provider incentives; leverage the availability of clinical data for administrative efficiencies; and implement reporting for healthier Medicaid members and Connecticut residents. At the same time, a robust and viable state HIE is essential to the success of the SMHP.

Once the SMHP is developed and approved by CMS, HITE-CT will be able to address the specific integration requirements between Connecticut's HIE and Medicaid to promote and achieve widespread adoption and meaningful use of HIT, including the exchange of health information. This Strategic Plan can, however, discuss the ongoing collaboration and Medicaid coordination.

DSS has been an active participant in health information technology workgroups and collaborative efforts, including but not limited to:

- Contributing to the development of the Statewide Health Information Technology Plan as a member of the Steering Committee overseeing the initiative;

- Collaborating with eHealthCT to implement a health information exchange pilot with a targeted group of hospitals and FQHCs; and

- Participating in HITEAC meetings and as an active member of the HITE-CT Strategic Plan State project team for the development of this Strategic Plan and the Operational Plan.

The following list includes the initial set of activities that DSS currently anticipates will be in the SMHP that will integrate the HIE and the Medicaid program:

- Continue to be a member of HITEAC to help ensure Connecticut's HIE supports Medicaid needs in terms of program activities promoting HIT adoption and meaningful use

- Continue to be a member of HITE-CT Board of Directors to provide the oversight of the HIE initiative to promote the long-term sustainability of HITE-CT and the Connecticut HIE

- Ensure that clinical data is shared across Connecticut's health care system, including Medicaid

- Administer the Medicaid HIT adoption and meaningful use incentive program and link providers into the Connecticut HIE.

4.2 Coordination of Medicare and Federally Funded, State Based Programs

The Connecticut State Government HIT Coordinator has begun to coordinate with a number of the federally funded programs across the State. Some of these programs are summarized below.

Epidemiology and Laboratory Capacity (ELC) Cooperative Agreement Program

The State Epidemiologist has extensive connections with local, State and Federal resources that are involved with disease surveillance, monitoring and reporting. Several inefficiencies in current information gathering and reporting processes could be addressed through standardized messaging the HIE could provide.

The State Epidemiologist currently collaborates with State agencies involved in the HIE development and has expressed interest in collaborating even further to develop capabilities that would support ELC efforts.

Connecticut Prescription Monitoring and Reporting System

This is a program funded out of the U.S. Department of Justice. The prescription monitoring program collects prescription data for Schedule II through Schedule V drugs into a central database, the Connecticut Prescription Monitoring and Reporting System (CPMRS), which can then be used by providers and pharmacists in the active treatment of their patients. The purpose of the CPMRS is to present a complete picture of a patient's controlled substance use, including prescriptions by other providers, so that the provider can properly manage the patient's treatment, including the referral of a patient to services offering treatment for drug abuse or addiction when appropriate. Under Connecticut law, information about all transactions for controlled substances (Schedule II-V) dispensed in Connecticut must be reported to the CPMRS. Pharmacies –- both in and out of state –- submit data twice per month. The data is then cleaned if needed, and added to a relational database.

A significant coordination already exists between this program and the HITEAC. The Commissioner of the Department of Consumer Protection is a member of the HITEAC and the HITE-CT board of directors and the manager of the CPMRS is a HITEAC attendee.

Maternal and Child Health State Systems Development Initiative programs

The programs that are part of this initiative currently collaborate with DSS, DCF, UCONN, the Department of Education and the State Laboratory. The programs use data and systems such as the Connecticut Pregnancy Risk Assessment Tracking System (PRATS), the Pregnancy Risk Assessment Monitoring System (PRAMS), WIC program data, pregnancy related mortality surveillance data, the child health profile database, Children & Youth with special Health Care Needs data, Fetal and Infant Mortality, Vital Records Data, newborn lab screening and Medicaid program data including Health care for Uninsured Kids and Youth (HUSKY). The programs are prepared to integrate as possible with the HIE to better leverage data sources and systems.

State Offices of Rural Health Policy

The Connecticut State Office of Rural Health supports the 65 of 169 towns in the State that are listed as rural, as defined by the 2000 Census. In 2008, the 65 towns, though nearly 40% of the State, housed less than 9% of the population.

The Office has been providing support for providers in the rural areas of the State, among other entities, and will likely be providing support for foundational broadband Internet access in parts of the State that does not current have it.

The Office has connections to DPH and is eager to collaborate with the Authority to promote HIT and HIE services to rural providers.

State Offices of Primary Care

The State Office of Primary Care in Connecticut is part of the Department of Public Health. The Office is currently developing databases of physicians in underserved areas and, in coordination

with the HITE-CT, will look for opportunities to leverage the data gathered by the Office in the HIE and for the Office to leverage the Statewide connection to providers in underserved areas.

State Mental Health Data Infrastructure Grants for Quality Improvement (SAMHSA)

The Department of Mental Health & Addiction Services is the recipients of Federal SAMHSA grants. Through past grants, DMHAS has strong working relationships with other State agencies, and will consistently evaluate opportunities to integrate with the HIE.

State Medicaid/CHIP Programs

The Department of Social Services is the provider for State Medicaid and CHIPS programs. DSS has been an active participant in the planning of the HITE-CT and is including all programs in its purview in the planning for the HIE.

Indian Health Service (IHS) and tribal activity

The State has working relationships with the two Indian tribal nations in Connecticut. As part of the interaction with the nations, the HITE-CT will work with the nations to enable information exchange with the tribal care providers.

4.3 Participation with Federal Care Delivery Organizations

Connecticut is actively planning to coordinate with federal care delivery organizations, including the Department of Veterans Affairs, and the Department of Defense.

HITE-CT has begun to craft an approach to reach out to key stakeholders from these organizations with the purpose of coordinating their participation in Connecticut's HIE activities.

4.4   Coordination with other ARRA Programs

Regional Extension Centers

eHealthCT was recently assigned as a REC for Connecticut. The assignment included a $5.75 million grant to allow them to offer technical assistance, guidance, and information on best practices to support and accelerate health care providers' efforts to become meaningful users of EHRs.

The current Health Information Technology Advisory Committee, some of whom are also on the board of eHealthCT, are coordinating assets to encourage HIE adoption along with EMR adoption to ensure the most effective use of HIT for beneficiaries of the REC's services.

Broadband Mapping and Access

Broadband coverage is not complete in Connecticut. Rural areas in the north east and north west corners of the State have lagged behind in propagation of high speed Internet access. Many of these towns have been identified by the Office of Rural Health.

The Connecticut Recovery Working Group, established to coordinate ARRA-funded activities, is in the process of completing the Broadband Mapping exercise and has applied for additional funds to increase broadband coverage in the State. Representatives of the Working Group are in close contact with members of the HITEAC and are actively looking for opportunities for the two to work together to enable broadband coverage for providers, especially in rural areas of the State.

Community Health Centers

Thirteen of Connecticut's fourteen active federally qualified community health centers were awarded grants from ARRA funds totaling nearly $40 million. The community clinics and their representatives have been active participants in the HITEAC and in exchange discussions in the State, and have expressed interest in continuing to do so.

5.0 Governance

The vision, strategic goals and principles described in Section 2.0 will be the guide for the governance of the HITE-CT. Governance for the Authority must be highly transparent and maintain high standards of accountability to ensure that the full network of stakeholders and participants are able to build the vital consensus and trust necessary for this kind of information sharing enterprise. DPH is moving forward with creating a governance framework that will support the development and facilitation of collaboration among the initiative's stakeholders, ensure compliance with legal and policy requirements and also provide for the appropriate degree of accountability to the residents of Connecticut.

There is already a demonstrated support for the HITE-CT concept and vision across a variety of stakeholders in Connecticut including the major medical provider representative organizations. Productive relationships have been developed among State of Connecticut agencies that operate in the Health IT arena. Considerable progress has been made in the collaborative development of the State HIT Plan in 2009 and the establishment of legislation in support of the current interim governance and the sustainable ongoing governance for the HITE-CT.

The governance structure must continuously work to maintain and enhance support for the HIE concept from within the Connecticut medical provider community, patient advocacy groups, and most importantly patients themselves.

The governance model for HITE-CT will also address collaborative relationships beyond Connecticut. This will involve establishing the mechanisms necessary to ensure effective coordination with the Nationwide Health Information Network. It will also include defining and supporting HIE collaboration across state lines particularly in areas with shared populations and health care markets in Rhode Island, Massachusetts and New York.

5.1 Current State Assessment

Starting in 2008, the State of Connecticut established a team representative of health care stakeholders and led by the Department of Public Health to address Connecticut's strategy for HIT. The result of this was the CT State Health Information Technology Plan published in June 2009. This plan articulated Connecticut's need for a Statewide HIE and recommended, among other things, the formation of the CT State RHIO to include *"... a diverse governing body representative of its key constituencies"*[21] to be responsible for implementing the other recommendations of the plan.

Subsequent legislation assigned the Department of Public Health as the lead health information exchange organization for the State with responsibility for the creation of *"...an integrated state-wide electronic health information infrastructure for the sharing of electronic health information among health care facilities, health care professionals, public and private payers and patients"*[22].

5.1.1 Interim Governance

Initial legislation established the current interim governance structure, the HITEAC, which includes wide stakeholder representation with the purpose of advising the Department of Public Health in HIE activities. Members and their appointing authorities are as follows:

- The Lieutenant Governor
- (a) A representative of a medical research organization, (b) an insurer or health plan representative, and (c) an attorney with experience in privacy, health data security, or patient rights, each appointed by the governor

- (a) A person with experience with a private sector health information exchange or HIT entity and (b) a person with expertise in public health, each appointed by the Senate President pro tempore

- (a) A representative of hospitals, an integrated delivery network, or a hospital association and (b) one person with expertise with federally qualified health centers, each appointed by the House speaker

- A primary care physician whose practice uses electronic health records, appointed by the Senate majority leader

- A consumer or consumer advocate, appointed by the House majority leader

- A person with experience as a pharmacist or other health care provider that uses electronic health information exchange, appointed by the Senate minority leader; and

- A large employer or business group representative, appointed by the House minority leader.

- The Commissioners of Public Health, Social Services, Consumer Protection, and Health Care Access, the Chief Information Officer, the Office of Policy and Management Secretary, and the Health Care Advocate, or their designees, are ex-officio, non-voting Committee members.

Since its inception in October 2009, the HITEAC has been meeting in public sessions monthly. In December 2009 it formed several sub-committees to increase stakeholder participation and buy-in and increase the experience and expertise available to the Committee on the many subjects the committee has under consideration.

In the short-term, sub-committees are responsible for making recommendations to the Committee with respect to development of the HIE Strategic and Operational Plans. In the longer term, the Committee may want to consider using the sub-committees to assist in monitoring and evaluating the State HIE Cooperative Agreement, or in addressing the other responsibilities of the Committee as articulated in statute.

Committee members chair the sub-committees, subject to the approval of the HITEAC Chair. The sub-committee chairs make appointments to the sub-committees. State agency personnel can also staff sub-committees.

The Committee addresses the governance issues specified by the ONC. Each sub-committee addresses one of the following areas:

- Finance

- Technical Infrastructure

- Business and Technical Operations

- Legal/Policy

- Special Health Services

Figure 5 provides a graphic of the current governance structure for Connecticut's HIE initiative.

Figure 5. Interim Governance Diagram
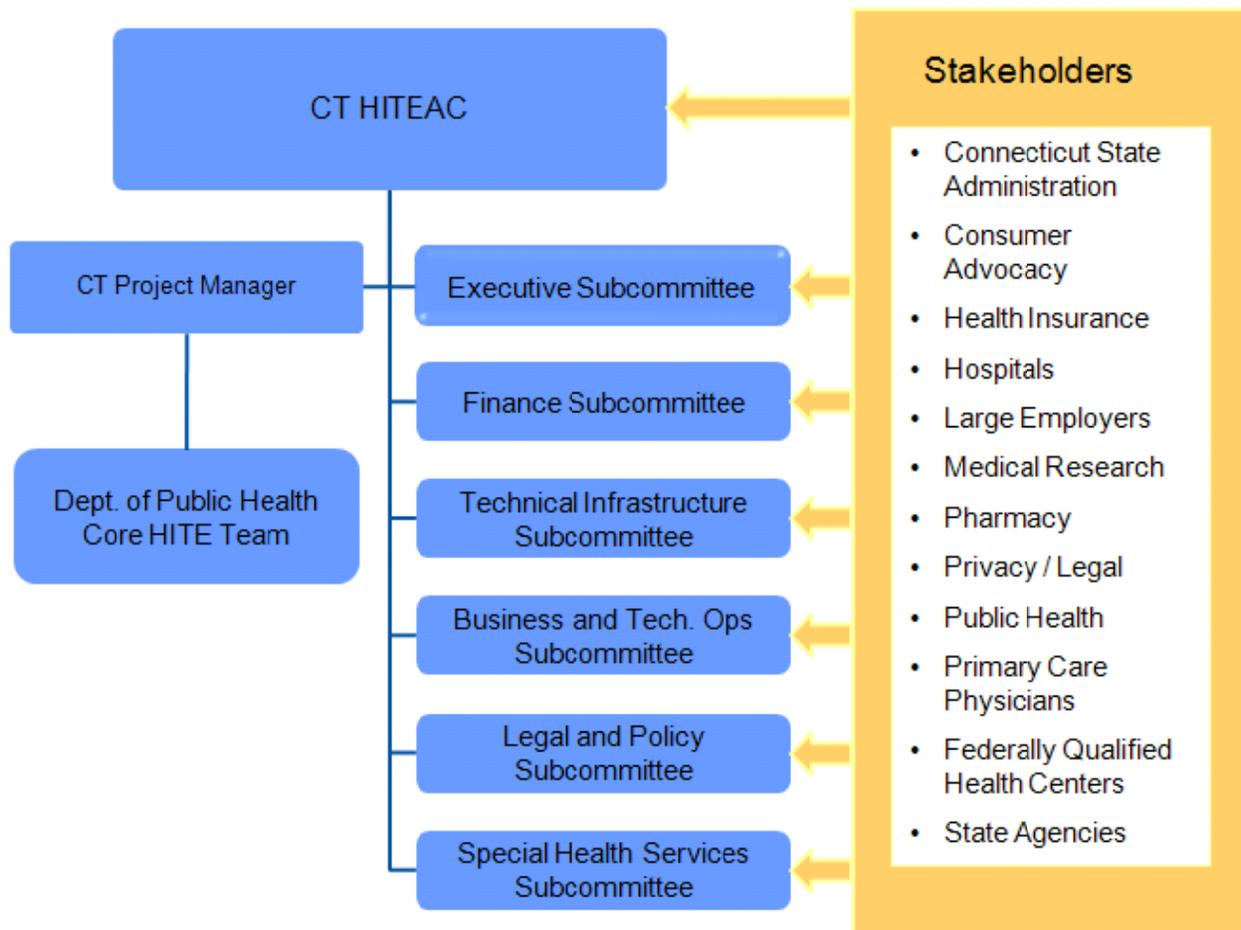
5.1.1.1   Finance Sub-committee

The Finance Sub-committee is responsible for making recommendations to the Committee regarding the identification and management of financial resources necessary to fund the health information exchange. This domain includes public and private financing for building HIE capacity and sustainability. This also includes, but is not limited to, pricing strategies, market research, public and private financing strategies, financial reporting, business planning, audits and controls.

As part of the short-term strategic and operational planning processes, the Finance Sub-committee makes recommendations addressing the following objectives:

- Developing the capability to effectively manage funding necessary to implement the State Strategic Plan. This capability should include establishing financial policies and implementing procedures to monitor spending and provide appropriate financial controls

- Developing a path to sustainability including a business plan with feasible public/private financing mechanisms for ongoing information exchange among health care providers and with those offering services for patient engagement and information access

5.1.1.2   Technical Infrastructure Sub-committee

The Technical Infrastructure Sub-committee is responsible for making recommendations to the Committee on the Statewide architecture, hardware, software, application, network configuration and other technological aspects that physically enable the technical services for HIE in a secure and appropriate manner. All recommendations to the Committee need to address the long-term (> 2 years) and the short-term (6 months - 2 years) goals to support the planning and implementing phases of the overall project. Short-term goals will identify the local and State-level requirements that can be achievable by the end of year 2 and long-term goals that will address interoperability with the NHIN.

Specifically, the Sub-committee must include, but is not limited to, the following objectives:

- Establish mechanisms for ensuring and establishing interoperability with the NHIN

- Ensure adherence to HHS adopted standards and certifications

- Define and development the technical architecture and approach for the State HIE

5.1.1.3   Business and Technical Operations Sub-committee

To achieve successful interoperability at the local, state and national levels, Statewide business practices necessary to support the delivery of HIE services must be developed.   The Business and Technical Operations Sub-committee is responsible for making the recommendations to the Committee regarding how the project will be managed, evaluated and what will be reported. This domain also includes activities such as procurement, requirements identification, process design, functionality development, help desk establishment, system maintenance, change control and others as deemed necessary to fulfill its objectives. This Sub-committee will recommend a process that prioritizes all necessary HIE services and propose how the state will leverage existing regional and State efforts.

For example, the Sub-committee must review and describe the planning and implementation phases necessary to recommend to the Committee on topics including:

- Determine the current state of readiness and how it will build capacity

- Map a critical path to develop HIE services for all health care providers throughout the state

- Define and describe the incremental progress of each domain and how it will be evaluated and reported on

- Identify the potential barriers and describe how resolution/agreement will occur, etc.

Specifically, the Sub-committee must include, but is not limited to, the following objectives:

- Support Meaningful Use HER adoption in collaboration with the Regional Extension center

- Leverage Existing Statewide and Regional Capacity

- Leverage Statewide Services and Directories

- Establish the HIE Infrastructure and interoperability with the NHIN

5.1.1.4   Legal / Policy Sub-committee

The Legal / Policy Sub-committee is responsible for making recommendations to address privacy and security issues related to health information exchange within the state, and between states. Such recommendations should address the need to:

- Analyze and/or modify state laws

- Develop policies and procedures

- Develop trust agreements such as data sharing, data use and reciprocal support agreements necessary to enable information exchange

The recommendations should also address how non-compliance with Federal and/or State law or policy applicable to HIE will be addressed.

This Sub-committee is also charged with making recommendations regarding how the Statewide HIE will comply with all applicable Federal and State legal and policy requirements, including how policy requirements will be developed and implemented to enable appropriate and secure HIE Statewide as well as on an interstate basis.

5.1.1.5   Special Health Services Sub-committee

This Sub-committee is responsible for making recommendations regarding how to involve community based service providers in the development of the Statewide HIE. The Sub-committee will also make recommendations specific to the following:

- Medically underserved populations

- Newborns, children and youth, including those in foster care

- The elderly

- Persons with disabilities

- Limited English Proficiency persons

- Persons with mental and substance abuse disorders

- Persons in long term care

5.2   Role of the Governance Entity

The governance structure for HITE-CT must foster a collaborative and entrepreneurial spirit in the development of initiatives and projects in health information sharing. The HITE-CT governance structure must balance these sometimes competing objectives and allow for the appropriate exchange of health information for State agencies and Connecticut health care providers.

Governance for achieving the HITE-CT vision will effectively support planning and start-up, HITE-CT development and implementation and the oversight and governance of HITE-CT ongoing management and operations.

Three critical principles drive the governance requirements for the HITE-CT. These are: 1) clarity and transparency of the decision-making processes and responsibilities; 2) inclusiveness of stakeholder participation from the onset, and 3) strong interdependency between the governance of the HITE-CT and financing mechanisms.

5.2.1.1   HITE-CT Board of Directors

Recent legislation (May 2010) has created the HITE-CT as a quasi-public authority that will take over responsibility for the implementation and management of the Statewide HIE from DPH in January 2011 and become the lead health information organization for the State. The HITE-CT has a governing board of a similar structure to the HITEAC but with some expansion of stakeholder representation. The new board will add a second consumer or consumer advocate, a physician from a small practice, representatives from the departments of Public Health, Social Services, Consumer Protection and Information Technology as full voting members and the removal of a representative from the Office of Health Care Access (this office is now represented by the Department of Public Health). This results in a HITE-CT board with 18 full voting members and 2 ex-officio non-voting members. Of the voting members, 5 are government employees of the State and 13 are unpaid stakeholder representatives with limited terms appointed by the Governor and the legislature.

The board shall select, appoint and determine remuneration for a Chief Executive Officer (CEO). The HITE-CT CEO will be responsible for building an organization and administering the authority's programs and activities in accordance with policies and objectives established by the board including:

- Implementation and periodic revisions of the health information technology plan including the implementation of an integrated Statewide electronic health information infrastructure for the sharing of electronic health information among health care facilities, health care professionals, public and private payers, state and federal agencies and patients

- Appropriate protocols for health information exchange

- Electronic data standards to facilitate the development of a Statewide integrated electronic health information system for use by health care providers and institutions that receive State funding

The CEO of the HITE-CT will formally report annually, to the Governor and the General Assembly, on funding and the status of health information exchange and health information technology in Connecticut.

HITE-CT has the ability to create subsidiaries which will also be quasi-public agencies with their own boards and at least 50% representation from the HITE-CT board.

5.2.1.2   Governance Model

HITE-CT will build a comprehensive governance model that expands upon the legislative definition and description of the HITE-CT board roles and responsibilities. This model will categorize HITE-CT decision making into a number of "decision domains". The model will address specific decision makers by role (e.g. HITE-CT CEO) and decision making groups (e.g. HITE-CT board and sub-committees) and specify the roles and responsibilities of the decision makers for decisions in each domain.

The governance model for HITE-CT must address all possible areas of decision making including:

- Advocating for HITE-CT and encouraging public participation

- Encouraging Stakeholder participation in HITE-CT including individuals, enterprises and stakeholder representative bodies such as associations

- Promoting health technology adoption across all health care providers, payers, and patients to provide the structured health information that will be the life blood of HITE-CT

- Strategic planning to ensure HITE-CT is at the forefront of Health IT in Connecticut and Nationwide

- Managing the HIE utility by overseeing technical operations to ensure availability, adaptability, and usability and the organization required to support that

- Conducting business operations including financing and accountability mechanisms

- Providing accountability and oversight of the exchange of health information to ensure legal and policy requirements are satisfied

- Fostering nationwide and interstate collaboration on health information exchange and related standards development

5.3   Accountability and Transparency

It will be vital to ensure that the governance of HITE-CT operates in a highly open, accountable and transparent fashion to maintain the high levels of trust and consensus that will be necessary to create and maintain HITE-CT.

HITE-CT must be accountable to all stakeholders including participants, supporters (including funders), and the residents of Connecticut. As such, it will be vital to develop clear performance metrics for HITE-CT that will identify the inputs, outputs, and outcomes of the HITE-CT initiative and have the capacity to provide clear accountability for the initiative.

This will include meeting ONC reporting requirements. The evaluation approach detailed in Section 10.0 provides additional information on these requirements.

The HITE-CT will place significant effort to meet these requirements by identifying and building consensus on the appropriate measures needed across all stakeholders. This will include developing measures that align with HITE-CT strategic objectives, provide a clear means for the evaluation of the HITE-CT that will allow for the ongoing updating of strategic and operational plans. An effective accountability approach will require the adoption of business intelligence capabilities within the technical solution for HITE-CT.

All current participants in the HITE-CT initiative are supportive of a high level of transparency for HITE-CT to provide the maximum visibility into planning and development activities and decisions. At a minimum, the HITE-CT will provide a publicly available policy manual detailing HITE-CT's operating and management procedures and will establish an open communications strategy, including public awareness/education campaign and the HITE-CT annual report.

5.4   State Government Leadership Changes

Connecticut will hold a gubernatorial election in November 2010. As the current Governor, M. Jodi Rell is not seeking re-election, the election of a new Governor is inevitable and the administration will change. This results in a level of uncertainty as a number of key leadership positions in Connecticut State government will change incumbents during a critical time in the development and transition of HITE-CT's governance structures and processes. It is critical that a communications process be initiated to ensure newly elected and appointed leadership are fully briefed in a timely manner. Part of this communications process includes the development of a State Leadership Awareness, Education and Participation Plan. The process to develop this must include:

- Understanding of stakeholder groups, view points and needs of newly elected and appointed leadership

- Tailoring of communication around the value proposition of the HIE to each stakeholder group

- Developing and sharing case studies that demonstrate the value of the HIE

- Coordinating with the Strategic and Operational planning process to ensure strong, compelling and fully aligned messages are presented.

5.5 Governance Summary

- **HITE-CT Legislation**

    o An interim governance structure has been well established under the leadership of DPH and a transition is planned to occur between the first HITE-CT board meeting in October and hand-over of responsibilities from DPH to HITE-CT in the beginning of January 2011.

- **Roles of Governance**

    o The founding principles of HITE-CT include ensuring the clarity of decision making processes, inclusiveness, and that those organizations that will support HITE-CT must be provided a voice in governing HITE-CT.

- **Quasi-public Authority**

    o The long-term governance of HITE-CT will be completed by a quasi-public authority that will reflect the interests of all stakeholders and ensure the efficient and effective management of the HIE.

- **Accountability and Transparency**

    o HITE-CT must be governed and operated in a clear and accountable manner to ensure stakeholder support and that the promise of health information exchange is realized in Connecticut. This will mean meeting, and going above and beyond, all State and Federal reporting requirements.

6.0   Finance

Connecticut is focused on the core issue of securing and maintaining adequate long-term financial sustainability as it presents a key risk for the development of the HIE. The State HIE cooperative agreement grant goes a long way to help set the foundation necessary to get HITE-CT initiative moving forward, because it will provide $7.29M plus approximately $1.16M in matching funds or in-kind services totaling $8.45M. Ensuring that the required matching funding for the cooperative agreement is available will be a key priority for HITE-CT along with establishing an effective cost allocation methodology, where necessary, to meet Federal requirements.

6.1   Current State Assessment

Connecticut has begun to address the issue of financial sustainability of the HIE. The plan to address this issue has the following key components:

- Connecticut is considering the establishment of a two-stage approach to funding. Stage 1 start-up funding consists of base funding for limited functionality based on ARRA funding and possibly limited funds from subscriptions. Subscription fees may be considered for up-front funding but there is a concern that these types of fees may hinder the participation of some of the participants. Stage 2 consists of moving to sustainable funding as the infrastructure develops and services and enhanced functionality are made available

- To address the need for long-term sustainability, Connecticut has begun to study other state's approaches to providing ongoing sustainable funding for health information and to construct a number of scenarios for ongoing sustainability

- Connecticut is also considering whether HITE-CT should seek contributed income from various stakeholders in the form of annual or monthly subscription fees or transaction fees to support its financial needs and grow its HIE capabilities. Before HITE-CT moves forward on this approach, the Finance Sub-committee will work collaboratively to develop a three-year financial sustainability model based on a gradual implementation of services and on-going support

- It will be necessary to establish clear financial controls and reporting so as to ensure that the financing of HITE-CT is economical and sustainable over time

- Connecticut believes that the financial sustainability plan must be coordinated with the deployment of the HIE functionality that in turn is connected directly to the value proposition (e.g. providing secure transmission of clinical results will be a cost-saving for hospitals, providers and laboratories)

6.2   Value Proposition of HITE-CT

There is a broad agreement among HITE-CT stakeholders that there needs to be a strong and compelling value proposition for the HIE that sets realistic expectations and that is articulated in both qualitative and quantitative benefits. This value proposition must demonstrate economic and health-outcome specific benefits, include performance indicators for reporting requirements and most importantly, enable tailoring of communication around the value of the HIE to each stakeholder group.

Figure 6 provides an initial view of the future users of the HIE with examples of corresponding benefits they can expect to obtain from the HIE. This table will be revised and maintained as new stakeholders are identified and new services created.

Figure 6. Initial Mapping of HIE Users and Value Proposition

Connecticut HIE Stakeholder/User	Examples of Value / Benefit

• Patient or Caregiver	• Improved quality in care delivery and health outcomes, including:
	   o Fewer visits through better disease management
	   o Shortened length of stays
	   o Fewer adverse drug events
	   o Reduction of duplicative and unnecessary tests, visits, referrals
	• Reduced health care expense
	• Support Medical Homes
	• Improved health care services to rural and underserved populations

• Nurses
• Primary Care Physicians
• Specialty Care Physicians (behavioral, mental health, therapists, etc.)
	• Improved quality of patient care through:
	   o Improved transition of care
	   o Medical errors avoided
	   o Reduction of unnecessary clinical tests
	   o Remote monitoring and telehealth
	• Lives saved (mortality reduction)
	• Improved reimbursement rates
	• Improved customer service /patient loyalty
	• Hospitalization avoided

• Hospitals and Health Systems
• Community Health Centers
• Clinics
• Ambulatory Surgery
• Skilled Nursing Facilities
• Long-Term Care Facilities
• Department of Correction Provision of Health Care
	• Improved quality of patient care through:
	   o Improved transition of care
	   o Medical errors avoided
	   o Reduction of unnecessary clinical tests
	   o Remote monitoring and telehealth
	• Improved reimbursement rates
	• Improved customer service /patient loyalty
	• Improved competitive market position

Connecticut HIE Stakeholder/User	Examples of Value / Benefit
	• Lives saved (mortality reduction) • Hospitalization Avoided
• Independent Laboratories • Independent Radiology Centers • Independent Pharmacies	• Improved quality of patient care • Improved customer service / patient loyalty • Improved competitive market position
• Employer / Plan Administrator • Health Plans • Pharmacy Benefits Mangers (PBMs)	• Improved regional health quality • Reduced expense in delivering care • Improve quality in care delivery
• CMS / Medicare • State Medicaid • State Agencies (Department of Public Health, Epidemiology, DMHAS, etc.)	• Improved public health services • Improved regional health quality • Reduced expense in delivering care • Improved quality in care delivery • Availability of data for various purposes
• Federal Agencies and Care Providers (Department of Veterans Affairs, Department of Defense, Indian Health Services, etc.)	• Improved regional health quality • Reduced expense in delivering care • Improved quality in care delivery • Availability of data for various purposes

6.3   Short-Term Startup Funding for the HITE-CT

Connecticut is considering the establishment of a two stage approach to funding. The first stage consists of a start-up funding required to implement limited HIE functionality. The State plans to leverage the ARRA funding as the foundation and possibly limited funds from subscriptions. In addition, HITE-CT will make a priority to identify the required matching funding for the cooperative agreement is available along with other short-term funding sources as required.

6.4   Long-Term Sustainability for HITE-CT

Connecticut's HITEAC has agreed on a key set of principles for creating a clear plan for sustainability as the State's initial funding source will eventually become depleted. These principles require the HIE to: 1) offer services that the future HIE users will want, 2) at a price they will be able to bear, 3) in a way that revenue exceeds expenses to further invest in ongoing value-creation initiatives, and 4) deliver services at a level that health care organizations and other stakeholders have come to expect from suppliers. In addition, once funding has been invested in the development of the HIE infrastructure, these assets must be leveraged and re-use to deliver as many value-added services as necessary to achieve sustainability.

Connecticut's second stage approach to funding consists of conducting a careful evaluation of different long-term funding options for HITE-CT operations that may require various

combinations of legislative mandates and voluntary participation by stakeholders. These potential revenue sources include continuation of direct funding from sponsoring government and/or charges, fees, and payments based on the actual utilization of HITE-CT by participants. The funding structure will be developed to encourage, not discourage, participation by as many health providers and organizations as possible. The funding structure needs to be adaptable to increases in HITE-CT network participants and the maturity increases of the HITE-CT network.

Connecticut has constructed a number of scenarios for ongoing sustainability. All of these options, and their various combinations, will be considered by the Finance Sub-committee in the development of the HITE-CT financial sustainability model to support the HIE during development and also as it becomes a vital component of how health care services are rendered and transformed in Connecticut. Figure 7 below provides a summary of the five scenarios currently under consideration.

Figure 7. Financial Sustainability Scenarios

Transaction Fees	• Participant fees based on type of service or data requested. This may include a tiered scale with volume discounts – lower fee per message delivered for higher volumes, and a nominal, one-time start-up fee
Subscription Fees	• Participant fees based on a schedule (e.g., annual or monthly) • Different variations are possible, including a tiered fee schedule which recognizes differing levels of participation, organization type or organization size • Transaction fees can be combined with subscription fees in a hybrid approach • Caution should be used in regard to the use of transaction fees as they may represent a barrier to HIE adoption if the benefits of the service are not clearly demonstrated
Private Sector Funding	• Funding that demonstrates participant commitments and can include gift-in-kind • Caution should be used in regard to the use of private sector funding as it may be difficult to rely on this funding source in current economic circumstances and there may be quid pro quo (participation and equity) issue
Performance-based Incentives	• Incentives paid by insurers to physicians and health systems for achieving certain health care-related quality measures or milestones that depend on the use of HIE • This option can be more complex to administer than alternative mechanisms
Claims-based Payer Assessment	• Charge being borne by a broad-based constituency – all recipients of health care services. This funding source has potential to generate significant revenues that can be easily predicted • Depending on services offered, the value to payers may vary significantly. Risk of payers passing the fee on to patients

	through increased premiums if assessment is added to claims

6.5   Financial Management and Reporting

Connecticut will establish and maintain the necessary project financial and reporting structure, audit and control mechanisms required for establishing and sustaining the HITE-CT. HITE-CT will ensure that mechanisms are in place and maintained to:

- Comply with audit requirements of the Office of Management and Budget;

- Submit annual Financial Status Reports;

- Submit semi-annual progress reports to ONC; and

- Submit quarterly reports as specified in section 1512(c) of the Recovery Act, including detailed information on any subcontracts or sub-grants awarded.

6.6   Finance Summary

- **Value Proposition**

  o   There is a broad agreement among HITE-CT stakeholders that there needs to be a compelling value proposition for the HIE that sets realistic expectations and that is articulated in both qualitative and quantitative benefits. This value proposition must demonstrate economic and health-outcome specific benefits, include performance indicators for reporting requirements and most importantly, enable tailoring of communication around the value of the HIE to each stakeholder group.

- **Short-Term Start-Up Funding**

  o   Connecticut is considering the establishment of a two stage approach to funding. Stage 1 (start-up funding) consists of leveraging the State HIE cooperative agreement grant to help set the foundation necessary to get HITE-CT initiative moving forward along with possibly limited funds from subscriptions. In addition, HITE-CT will make a priority to identify the required matching funding for the cooperative agreement is available along with other short-term funding sources as required.

- **Long-term Sustainability**

  o   Connecticut's Stage 2 approach to funding consists of conducting a careful evaluation of different long-term funding options for HITE-CT operations that may require various combinations of legislative mandates and voluntary participation by stakeholders. These potential revenue sources include continuation of direct funding from sponsoring government and/or charges, fees, and payments based on the actual utilization of HITE-CT by participants.

- **Financial Management and Reporting**

  o   HITE-CT must be able to meet all reporting requirements and especially those additional requirements for ARRA funding. HITE-CT must be able to demonstrate to all of its stakeholders the realization of the value proposition of the HIE and a positive cost-benefit analysis.

7.0   Technical Infrastructure

HITE-CT is envisioned as providing the connecting network for the exchange of health information across Connecticut, connectivity with other states and with the NHIN platform. The infrastructure will be built on a secure, service-oriented architecture that enables health care data transfer using recognized Federal and State health information technology standards. The technical design will enable connection to regional HIEs and integrated health systems to leverage existing investments in their HIE efforts.

Connecticut's approach to defining and establishing the technical infrastructure for HITE-CT is focusing on key areas:

- Defining at a high-level the complete set of products, capabilities and services that the HITE-CT infrastructure will provide in support of the overall vision

- Establishing the appropriate authentication, credentials and consent management mechanisms to ensure the protection of consumer privacy

- Augmenting the understanding of Connecticut's HIE readiness, including HIT adoption across health care providers

- Ensuring HITE-CT meets the security, integrity, availability and reliability requirements

- Considering the integration with existing and planned State agency infrastructure, such as Maven®, Public Health Information Network (PHIN) and Medicaid Management Information System

- Investigating the inter-state linkages that will be necessary for the effective development of the HIE to connect across state lines

- Leveraging existing patient and provider directories to avoid redundant work and costs

7.1   Current State Assessment

Planning for a Connecticut Statewide HIE began in 2008 and resulted in the publication of the State HIT Plan in June 2009. During the development of the State HIT Plan, Connecticut achieved broad agreement that true transformation of the Connecticut health care system will depend on the conversion of a traditional, disparate, paper-based system into the National Health Information Network based on the electronic exchange of data, compatible with national data standards in order to allow for interstate interoperability, serving the needs of patients, providers and health care decision makers.

Connecticut is committed to build upon the State HIT Plan by leveraging progress made to-date in developing multiple local HIE and HIE-like systems, provider information surveys and various registries. The State realizes, however, that a lot of work still needs to be done to gain a better understanding of the level of EMR/EHR adoption in physicians' practices – especially smaller practices (more than 60% of practices have less than five physicians) – to develop a collaborative process with strong technical representation from stakeholders to achieve a consensus-based, practical HIE architecture and to define the resulting infrastructure requirements.

7.2   EHR/EMR Adoption

Increasing the use of EMR/EHRs by primary care practitioners and other health care providers is a critical ingredient for achieving successful Statewide exchange of health care information.

As highlighted in Connecticut's environmental scan findings, health care providers in Connecticut are at a wide variety of maturity levels with respect to HIT and EHR/EMR readiness and adoption. Therefore, it is important to conduct a robust readiness assessment that will inform a transition plan aligned with EHR/EMR adoption. This will support the change management necessary for successful HIT adoption and HIE utilization in Connecticut.

To improve the current level of understanding of Connecticut's health care provider's HIT adoption level and to supplement the data currently available HITE-CT will work with the DSS SMHP project to leverage any additional HIT adoption knowledge uncovered.

Connecticut is a relatively compact state geographically with an estimated 95% of the geographical area has access to Broadband. However, there are 65 towns designated as rural with many concentrated in the Northeast and Northwest corners of the State with anecdotal evidence that a number of providers do not have ready access to high-speed Internet connectivity. The Department of Utility Control is currently engaged in a comprehensive mapping of broadband connectivity for Connecticut. Both HITE-CT and SMHP planning efforts will coordinate with both the DPUC efforts and DOIT's plans to extend the Connecticut Education Network to fully understand connectivity issues and build them into the roll-out plans.

To support and promote HIE adoption across the State, the State's Regional Extension Center(s) will assess individual providers' levels of EHR use and readiness to participate in an HIE. Because EMR adoption is a fundamental building block for achieving the exchange of health information, HITE-CT is committed to working closely with the Regional Extension Center(s) to define the mechanisms needed to encourage and support the adoption of certified systems in Connecticut.

7.3   Interoperability

HITE-CT will adopt nationally recognized standards and protocols to enable the interoperability and connectivity with existing investments of current HIEs (e.g., Danbury Hospital's HealthLink), envisioned future regional and local community health information exchanges, health care providers, and integrated delivery health systems and hospitals. HITE-CT will connect to and accommodate and/or assist the operations of these participants via an array of services.

HITE-CT will be able to provide essential services to physicians and patients, including, in the short-term:

- Clinical summary (e.g. discharge summary) exchange for care coordination across health care settings

- Clinical data sharing between disparate systems containing patient data

- EMR/EHR interfacing with the ability to provide data to Personal Health Records for patient engagement

- Electronic public health and quality reporting

Key public health information systems can benefit from HITE-CT's ability to access disparate information sources such as:

- Maven® (a package being used to collect an increasing set of disease-related screening and surveillance) which gets data via HL7 messages using the PHIN messaging infrastructure including Orion Rhapsody integration engine and the CDC NEDSS brokering tool

- Other CDC-standardized and legacy registry systems

- Electronic Lab Reporting (ELR)

- Lab Information Management Systems (LIMS)

- Other DPH systems including: HIV/AIDS, EMS/Trauma and Cancer incidence monitoring
  systems, Newborn Hearing and Screening, Vital Records Birth/Deaths systems,

HITE-CT will provide the opportunity to streamline these data collection and data sharing efforts
and make the approved and appropriate utilization of health information more efficient and
effective. The Statewide HIE should make it easier for providers to analyze health care
indicators on an individual patient and Statewide level to support the continuous improvement of
health care practices and outcomes in Connecticut and provide a streamlined and consistent
source of data for UCONN's Connecticut Health Information Network health research data
capability.

There are also a number of future interoperability opportunities for State agency systems:

- Connecticut's e-License system (which includes all State medical licenses) to be a key
  source of HITE-CT data

- Medicaid Eligibility and Claims Systems (EMS and MMIS)

- Medicaid e-Prescribing

- Medicaid Meaningful Use Incentives System

- State agency systems for Connecticut's various behavioral health programs

7.4   Standards Adoption Process

HITE-CT will be the State authority for specifying and adopting health care-related
interoperability and data interchange standards for use within Connecticut that will facilitate
current and future use of HITE-CT services. HITE-CT will be responsible for ensuring these
standards and related guidelines are widely disseminated and understood.

Policies making any standards mandatory for HITE-CT users will be enacted by the HITE-CT
Board of Directors.

7.5   HITE-CT Architecture Approach

HITE-CT will be the State authority for defining a comprehensive enterprise architecture
(including standards considerations) and document the full scope of required HITE-CT
technology infrastructure and services. HITE-CT will be required to have the expertise and
correct skill sets at the leadership level in order to ensure that the architecture is in alignment
with DOIT's Enterprise Wide Technical Architecture (EWTA) standards.

The architecture will permit the exchange of data between entities that house patient data and
authorized health care providers in a manner that will accommodate users at various stages of
technology adoption.

To achieve the vision for the Statewide HIE architecture HITE-CT will follow the principles listed
below in addition to the DOIT published "Conceptual Architecture Principles".

- **Open Process**: Establish an open and inclusive process for defining the Statewide HIE
  architecture, identifying the needs of the community (patients, providers, payers,
  government, etc.) and a clear statement of the value proposition of HITE CT

- **Minimum Redundancy**: Build a data sharing/exchange environment where redundancies are minimized and the:
  - o Level of data collected will be patient/event focused
  - o Data collection process will be providing organization focused
  - o Data aggregation for analysis and reporting will be objective/metric focused
- **Incentives**: Support "meaningful use" of EHRs
- **Service-Oriented**: The target architecture should consist of a number of services that are compliant with industry standards for service-oriented architecture to facilitate reuse, adaptability and interoperability.
- **Standards**: Build upon Federal standards and implementation efforts including the ONC HIT Standards Committee and those for the NHIN and comply with emerging national interoperability standards from connectivity to semantic reconciliation
- **Investment Protection**: Provide the ability to integrate with existing platforms and health information exchanges
- **Independence**: Keep architecture skills separate from product and implementation vendors' dependencies to maintain vendor and technology neutrality in the development of architecture
- **Ease of Use**: The future CT Health Systems Infrastructure will meet user-defined criteria for ease of learning, use, and support
- **Real-Time Integrated Enterprise**: The future CT Health Systems Infrastructure will allow providers, payers and the State to have current and up-to-the-second information regarding all health care interactions
- **Scalable and Extensible**: Provide incremental expansion of data exchange functionality over time on a base that is scalable to accommodate additional users and extensible in expanding capabilities to meet future business needs and Federal and State mandates

Starting with the requirements and technical conceptual architecture developed as part of the State HIT Plan, HITE-CT will follow the DOIT EWTA processes and develop a "Common Requirements Vision" or a similar process that will create an Enterprise Solution Architecture described from the following viewpoints:

- Business Architecture
  - o Business Architecture represents the requirements, principles and models for the enterprise's people, financials, processes and organizational structure.
  - o The goal of describing Business Architecture is to ensure that changes and enhancements to business functions, process, financials, people and organizational structure are fully optimized along with information and technology, in support of the business strategy.
- Information Architecture
  - o Information Architecture is that part of the architecture process that describes (through a set of requirements, principles and models) the current state, future state, and guidance necessary to flexibly share and exchange information assets to achieve effective enterprise change.

- Technology Architecture

  - Technology Architecture describes how technology components from multiple technology domains are deployed within technology patterns to provide the required technology services and the technology standards complied with.

Systems that are built to change are more valuable than systems that are built to last, and, in reality, are the only ones that last. Service Oriented Architecture (SOA) is used to build systems that are intended to change. Connecticut has determined that the HITE-CT system requirements will only be properly satisfied by an SOA solution. Specifically, the proposed solution must adhere to the following five principles:

- **The system must be modular** – Each component is a service consumer, service provider or both. Modules will exist at a variety of levels of granularity e.g. at a business process level such as certification and benefits issuance to simplify alignment with key business processes and at lower levels such as data services for a single database table to enable reuse across the application and the whole architecture. As with business services, the capabilities to specialize, mix and match, and swap components are key benefits.

- **The modules must be distributable** – Each module must be able to run on disparate computers and communicate with each other by sending messages over a network at runtime. This will enable edge servers on providers and other HIE sites.

- **Module interfaces must be clearly defined and documented** – Software developers write or generate interface metadata that specifies an explicit contract so that another developer can find and use the service (this helps enable loose coupling).

- **Modules must be swappable** – A module that implements a service can be swapped out for another module that offers the same service and interface. This is an aspect of loose coupling and it enables incremental maintenance and enhancements and means that HITE-CT's technology capabilities can be easily evolved over time.

- **Service provider modules must be shareable** – Modules are designed and deployed in a manner that enables them to be invoked successively by disparate service-consumer modules engaged in somewhat diverse, although partially related, business activities.

The fundamental concepts of modularity, reuse of in-house or externally developed IT modules and services and ubiquitous connectivity through the Internet position HITE-CT to continuously adapt and evolve the HIE capability as the Connecticut health care needs of the diverse customer community evolves.

7.6 Products and Services Portfolio

HITE-CT will enable authorized users to view and exchange relevant patient data and information over a secure Internet-based connection. Ultimately this will become a "full service" HIE where information from different sources, such as physician offices, laboratories, pharmacies, hospitals, health systems and payers including other HIE systems, can be used regardless of its source. Additionally, consumers of health care may also elect to connect their Personal Health Records (PHRs) offered by various entities. Figure 8 provides a high level view of HITE-CT's initial target functional capabilities.

Figure 8. HITE-CT Initial (First 3 Years) Target Functionality
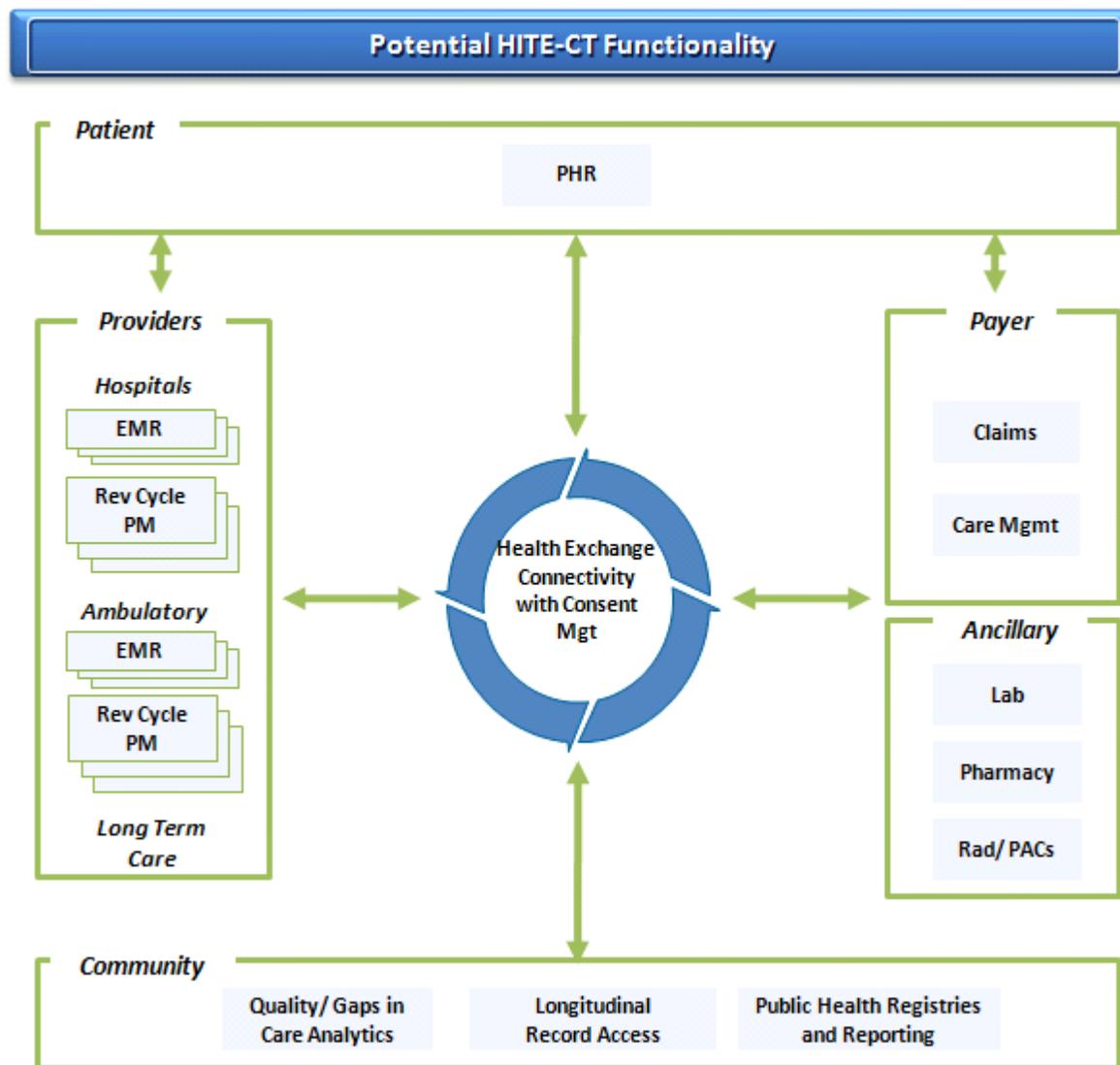
Connecticut plans a phased deployment of the Statewide HIE and considered the following drivers in establishing the phased plan for the first 3 years of the HITE-CT:

- **Meaningful use** - providing services aligned to the needs of Connecticut's providers in qualifying for Medicare and Medicaid meaningful use incentive payments

- **Critical mass** - considering the potential level of HIE usage and resultant dependencies

- **Customer variety** - balancing stakeholder capability differences and competing stakeholder needs

- **Existing investments** - leveraging what the hospitals provide locally

The high-level phased planning process made the following assumptions:

- The following services are well established and widely available outside of the Statewide HIE and therefore not considered a useful focus for HITE-CT efforts in the immediate term, but may be considered in the future:

- o E-prescribing services

- o Health care plan eligibility and claims processing

- EMR adoption by physicians and demand for HIE use will rise above 50% of physicians by 2015; HITE-CT will be poised to support an increased number of users even if this assumption is too conservative

- Personal Health Record (PHR) services should be offered in the later releases when there is a critical mass of data to make available, the demand exists and revenue to support development has been accrued during the previous releases

- Services to integrate ancillary services (e.g. laboratory, pharmacy and radiology) orders and results needs harmonization across providers before it should be considered part of the HITE-CT services. This may be in Releases 2, 3 or later). Consideration of whether this can be included earlier will continue as part of the transparent planning process

Connecticut has determined the initial prioritization of products and services and has grouped these into a number of releases as guidance for the operational planning process shown in Figure 9 below.

Figure 9. HITE-CT Initial Service Releases

Planned Service Releases	Services Planned
Initiation	• Procurement of services to build, maintain and operate the Statewide HIE infrastructure
Release 1: Continuity of Care and Public Health Registries and Reporting	• Initial phase to build a Statewide infrastructure that will support connections to local HIEs, the NHIN including Network Services, Master Patient/Provider Indexes and Record Locator Service • Ability for connecting providers, payers and ancillary service providers to exchange Continuity of Care Documents • Clinical data within the Statewide HIE automatically feeds Public Health Registries and Reporting needs • Interfaces to main EMRs supported and subsidized by the HIE
Release 2: Quality / Gaps in Care Reporting	• Main focus of this phase is development and deployment of metric-based Quality Reporting and the "care gaps" • Will include access to and integration with data from other sources – e.g. State systems, the RxHub • Further strengthening of the underlying infrastructure services including additional EMR interfaces • Further develop the various dimensions of CCD to allow for additional useful data interchange • May include ancillary services orders/results – to be decided based on agreeing a common approach across enough providers

Planned Service Releases	Services Planned
Release 3: Personal Health Records	• Main focus of this phase is to support consumer (patient) access to their information by harmonizing interfaces to PHR services • May include ancillary services orders/results – to be decided based on agreeing a common approach across enough providers

7.7   Procurement Approach

HITE-CT will work in collaboration with the State to review the State's procurement processes to determine their suitability as processes to support HITE-CT's procurement needs.

HITE-CT will review Connecticut State procurement vehicles and existing contracts to identify any suitable for HITE-CT.

HITE-CT will work in collaboration with the Connecticut State HIT Coordinator, the Connecticut Department of Administrative Services, the Connecticut Department of Information Technology and the Office of Policy and Management to develop a suitable procurement strategy / roadmap.
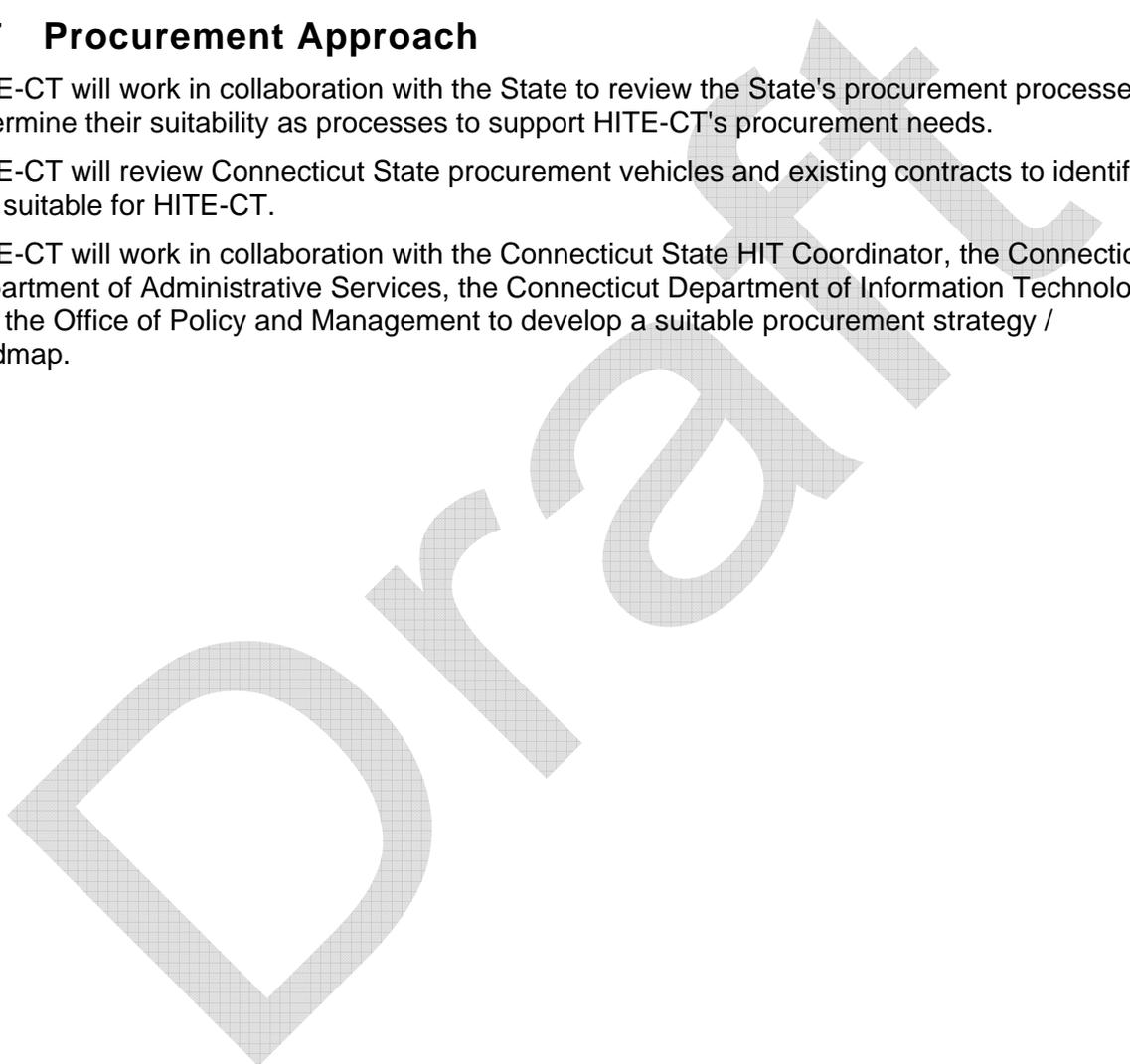
7.8   Technical Infrastructure Summary

- **Solution Architecture**

  o   HITE-CT will lead a broadly participative effort to define a comprehensive Enterprise Architecture.

  o   HITE-CT will acquire an SOA and standards-based, secure, feature-rich application that will enable providers to achieve meaningful use of EHRs.

  o   This solution will require a scalable technical platform and network capable of working with all providers, hospitals, and other care settings in the state.

- **HITE-CT Products and Services**

  o   Connecticut has determined the initial prioritization of HITE-CT products and services as guidance for the Operational planning process in 3 Releases:

    ▪   **Release 1 - Continuity of Care Documents (CCDs) and Public Health Registries and Reporting**, to address components of meaningful use, provide benefits to all State residents and build a foundational infrastructure and data set.

    ▪   **Release 2 – Quality/Gaps in Care Reporting**, to develop and implement metric-based Quality Reporting and the "care gaps" and provide access to and integration with data from multiple sources.

    ▪   **Release 3 - Personal Health Records (PHRs)**, to allow all residents the ability to help manage their own care through the management of their health records.

- **Standards**

  o   The nature of solution will require numerous interfaces to inpatient and ambulatory EHR products, hospital clinical information systems, laboratory systems, and other clinical and State Agency systems. HITE-CT will take a leadership role in Connecticut in using and encouraging the use of standards for interoperability, privacy and security.

- **HIT and HIE Adoption**

  o   HITE-CT will work with DSS as the State Medicaid agency and eHealthCT as the Regional Extension Center to encourage and support the adoption of EHR and HIE.

8.0 Business and Technical Operations

Connecticut is establishing strategies for supporting 'meaningful use' EMR/EHR requirements being developed by the Federal government, integrating with existing State and local HIE capacity, leveraging Statewide shared services and directories. In consultation with a broad set of stakeholders Connecticut has defined an overall implementation strategy that enables the connectivity of existing health information exchanges along with integrated delivery networks/health systems/point-to-point connections through HITE-CT. Capabilities and capacity will also be created for an interface with NHIN.

Connecticut realizes that full-service HITE-CT deployment to all targeted participants will not be possible at initial deployment due to differences in participants' varying level of adoption and readiness. The preferred option developed by the State agencies and private sector stakeholders is to initially ensure that the services delivered address at a minimum the requirements for 'meaningful use.' HITE-CT will continue to add incremental capabilities in phases based upon participant's needs and recommendations in support of fuller adoption. Finally, Connecticut will develop a deployment strategy that incrementally rolls out HIE services by provider type and geography based on their readiness levels.

Working collaboratively with Connecticut State agencies and private sector HIE stakeholders, the HITE-CT will continue to refine the implementation strategy and determine the full range of HIE participants.

8.1 Current State Assessment

Starting in 2008 the State of Connecticut established a team led by the Department of Public Health and representing the continuum of health care stakeholders to address Connecticut's strategy for HIT. The result of this was the Connecticut State Health Information Technology Plan published in June 2009. This plan articulated Connecticut's need for a Statewide HIE.

Subsequent legislation made the Department of Public Health the lead health information exchange organization for the state with responsibility for the creation of "...an integrated state-wide electronic health information infrastructure for the sharing of electronic health information among health care facilities, health care professionals, public and private payers and patients"[23].

This legislation also created the Health Information Technology and Exchange Advisory Committee including wide stakeholder representation with the purpose of advising the Department of Public Health in HIT and HIE activities.

Legislation in May 2010 created the HITE-CT as a quasi-public authority that will assume responsibility for the implementation and management of the Statewide HIE from DPH in January 2011. The HITE-CT has a governing board of a very similar structure to the HITEAC.

Until the HITE-CT Board of Directors and Chief Executive Officer have been appointed and the transition of responsibilities can begin DPH has responsibility for managing the strategic and operational planning process for the HIE and progressing the project to the implementation phase.

Commissioner J. Robert Galvin dedicated DPH staff resources to manage the $7.29 million cooperative agreement with ONC and to begin the process of planning and building a statewide HIE. These resources include an HIT coordinator, project manager, contracts officer, attorney, and technical advisors to work with the HITEAC on these critical planning efforts. The DPH HIE team reports to the Chief of the DPH Planning Branch.

Across Connecticut there are a number of HIE initiatives already underway at various stages of planning and development. The HITE-CT planning process is coordinating with the furthest advanced of these efforts to learn from their experiences and to leverage initiatives where possible.

There is sufficient information available regarding potential user readiness to participate in the HIE to inform the planning process and allow for planning the level of support to be provided by HITE-CT. The current planning process is open and transparent causing considerable public interest and information flow. The need for communication strategy and planning is understood but execution is at a very early stage.

8.2   HITE-CT Communication Strategy

Goals of the HITE-CT communication strategy includes:

- Educating health care consumers and providers about how electronic records and electronic record exchange can improve the quality and efficiency of health care for Connecticut residents drawing in part on what has been learned during the DSS Transformation initiatives and Danbury HealthLink

- Gathering inputs on how to best operate, manage, and govern the Statewide network

- Providing a forum to discuss systems for safeguarding personal health information

- Engaging consumers about their preferred options for exercising control over their personal health information

- Gathering suggestions and reactions to options for ongoing financing and governance of HITE-CT

- Ensuring that providers are aware of funding and technical assistance opportunities and are knowledgeable about the Regional Extension Center

- Using all traditional and new media resources for communication

HITE-CT will use all communication means at its disposal to communicate information to the public about plans for promoting and supporting adoption of EHRs and the HIE. These include:

- Continuing work with the HITEAC to expand the understanding of unique stakeholder needs, current and proposed capabilities, and potential barriers to implementing health information exchange

- Publishing the draft Strategic and Operational Plans for comment and making it available through the DPH website

- Requesting stakeholders publish articles in publications alerting their readers of the opportunity to submit input on the draft Strategic and Operational Plans

- Attending numerous stakeholder meetings, such as the associations and societies of Hospitals, facility-based and home health providers, nursing homes, consumers and others

- Coordinating and synchronizing where possible, the overall State HIT strategic planning and communication activities with the DSS Medicaid State health information technology planning activities

- o Concurrent with this planning process, DSS is working to develop Connecticut's SMHP; the HITE-CT Strategic and Operational Plans must be supportive of and consistent with the Medicaid plan
- o The DSS SMHP project team participates in the HITEAC and HITE-CT project meetings on a weekly basis

8.3 HIE Infrastructure Procurement and Implementation

HITE-CT will develop a full set of requirements based on the established architecture that will support the full set of HIE products and services that may be deployed over the first 3 years thus retaining flexibility to support the actual deployment plans.

HITE-CT will conduct a full and open procurement process to acquire:

- Software, hardware, and services for the design, build and implementation of the HIE and the ongoing maintenance required
- Services and facilities required to host and operate the HIE systems and related services

The resulting contract will retain flexibility for the future allowing HITE-CT to change vendors or bring these capabilities in-house in subsequent years.

8.4 Technical Operation Approach

HITE-CT will design and create an operational organization reporting to the HITE-CT Chief Executive Officer including, but not limited to, performing the following key functions. These functions are not meant to dictate the structure of the HITE-CT organization:

- Identify Participants and Plan Deployment
- Coordinate Standards and Adoption
- Administer and Manage Utility

8.4.1 Identify Participants and Plan Deployment Processes

HITE-CT will enable the connectivity of existing local health information exchanges, integrated delivery networks, health systems, individual hospitals and health centers. It is fundamental to consider the diverse and complex health care delivery system in Connecticut and to be strategic in the technical implementation of HITE-CT.

Local HIEs, health systems and hospitals that have provided HIE-like connectivity to their community physicians should have opportunities for connection to HITE-CT in order to take advantage of these already established networks of providers. The best strategy for connecting health systems and other organizations that have established HIE capacity will be identified during implementation planning in partnership with the engaged implementation vendor. The implementation strategy must include encouraging early adopters who will be able to assist in driving acceptance of HITE-CT and to ensure that there will be HIE access for all Medicaid providers. The early adopters are likely to include DSS Medicaid Operations (as a payer), several community hospitals, health centers and physician groups. Where possible, the HITE-CT implementation will leverage existing directories and shared services such as the Master Patient indexes from the DSS's MMIS and Danbury's HealthLink.

Full deployment to all participants will not be possible, or even desirable at the initial launch of the first release, therefore an incremental implementation is necessary. This is due to several factors including differences in users' levels of HIT adoption and the time required to connect

each regional HIE, health system, hospital, practice and other health care entity. The strategy is to initially ensure that the HIE services address the requirements for meaningful use at a minimum and continue to add incremental capabilities in well articulated phases based upon user's needs. This incremental approach will also allow HITE-CT to apply lessons learned from early experiences and continually adapt its approach to changing conditions.

HITE-CT customer segmentation analysis, priorities determined by the HITE-CT Board of Directors for the implementation of HITE-CT portfolio of product and services, the State Medicaid HIT Plan (SMHP) and readiness information available will be used to devise a comprehensive phased implementation roll-out plan.

The implementation roll-out plan, under the direct control of the HITE-CT Board of Directors, will be adjusted during the early phases of deployment based on the levels of success achieved and changing market circumstances.

8.4.2   Coordinate Standards and Adoption

A key aspect of implementation will be HITE-CT's ability to identify, agree and promulgate information sharing, privacy/security and interoperability standards required for the smooth operation of the HIE and the ability to connect to existing HIE and HIE-like systems and the Nationwide Health Information Network. Standards will include those adopted by both State and Federal entities involved in information exchange. This work will be driven by policy decisions taken by the HITE-CT Board of Directors within the context of the legal and policy framework.

Connecticut will follow a coordinated approach to provide technical assistance and broad support for the HIE initiative to its participants. The approach will consist of building technical advisory capability using the existing surveys and data from the SMHP planning process. In addition, Connecticut will work directly with larger providers and with the Regional Extension Center to determine HIT readiness.

The readiness assessment will be based on a maturity model that will position integration with HITE-CT in each provider's ongoing plans - immediate or later. The model will have various levels related to the size and complexity of the provider (e.g. small practice [5 or less physicians] with minimal support staff; a large multi-physician practice with shared nursing and other support staff; a community based clinic; a small general hospital; a large acute-care hospital; etc.) and address the following questions:

- **Vision and Strategy** - How is HITE-CT participation perceived and valued in the provider organization? How well does HITE-CT participation support the provider's strategic initiatives and plans? Does the provider have an EHR strategy across the enterprise?

- **Governance and Organization** - Are decision rights and controls in place within the provider organization to manage and secure clinical information assets? What HIE-centric roles and departments exist?

- **Process Automation** - Is the clinical information lifecycle within the provider organization managed and what types of clinical information is managed by automated systems? What is the level of systems certification?

- **Enabling Infrastructure** - What information management technologies are in place in the provider organization to support current needs? What clinical information interchanges are already in place? Is there a technology strategy and plans to address the specific needs of HITE-CT participation?

- **Metrics** - Are there specific metrics within the provider organization to determine the impact of HIE on the bottom line? How much clinical information is redundant? How much poor quality clinical information exists and what impact does it have on the business and outcomes?

As the role of Health IT expands in the delivery of health care services in Connecticut, it will be important to monitor the availability of the IT skills required. The availability of highly skilled practitioners in areas such as database management and health informatics is especially important. Ensuring Connecticut's workforce is able to support and benefit from the developments in Health IT will require a comprehensive approach that engages medical providers, educational institutions and the resources of the State.

8.4.3   Administer and Manage the Utility

HITE-CT staff will conduct day-to-day management of a number of critical functions:

- Customer service functions to support users and resolve problems as they occur, analyze root causes and implement lasting solutions to operational problems and effectively communicate service levels attained.

- Administration of security and access control and provide reporting to demonstrate compliance with all privacy and security policies.

- Contract and service level agreement management with service providers to ensure the providers live up to their contracts and service levels are maintained.

8.5   Business and Technical Operations Summary

- **Deployment Strategy for HITE-CT**

  o   Connecticut will create an incremental approach to deploying HITE-CT with an initial focus on ensuring the HIE can support meaningful use requirements. HITE-CT will work closely with stakeholders to develop a detailed deployment approach that will use the experiences and, where possible, assets of early adopters to ensure a successful deployment of HITE-CT across Connecticut.

- **HITE-CT Communications Strategy**

  o   HITE-CT will create a detailed communications strategy designed to educate consumers and providers about how electronic records and electronic record exchange can improve the quality and efficiency of health care for Connecticut residents. This communication strategy will take advantage of multiple communications methods to spread the word about HITE-CT and its benefits.

- **HITE-CT Technical Implementation Approach**

  o   Deployment Planning - The technical deployment of HITE-CT will build upon deployment planning to ensure that the right technologies and services are developed, deployed and eventually maintained to high standards.

  o   Infrastructure Procurement –

    - HITE-CT will initiate an open procurement process for the acquisition of HITE-CT infrastructure as an immediate priority. Technical deployment will be achieved by a combination of HITE-CT and vendor resources.

    - HITE-CT will look to select a vendor with a proven HIE product who can ensure that Connecticut health care providers are able to qualify for Medicare and Medicaid incentive funding within federal time-lines.

- o Infrastructure Procurement cont'd. –
    - HITE-CT will look to select a vendor with a proven HIE product who can ensure that Connecticut health care providers are able to qualify for Medicare and Medicaid incentive funding, beginning

9.0 Legal / Policy

Connecticut's approach to establishing the appropriate legal and policy framework and requirements consists of working towards adopting and harmonizing Federal and State legal and policy requirements, creating the legal and policy framework to ensure policies meet standards of definition and consistency and are comprehensive across the needs of the HITE-CT (e.g., privacy and security, patient consent, data sharing and indemnification), and establishing the enforcement mechanism necessary to enable a successful adoption and implementation of HIE services in the State. To accomplish this, the State plans to leverage emerging national interoperability standards and protocols for data exchange, lessons learned from Connecticut's existing HIEs and from other state as well as the expertise of the HITEAC Legal / Policy Sub-committee members.

9.1 Current State Assessment

Connecticut has adopted an Act that establish the HITE-CT Board of Directors to direct the authority regarding appropriate protocols for health information exchange and electronic standards to facilitate the development of a state-wide integrated health information system[24]. Section 82 of the Act establishes the seven principles for the adoption of electronic data standards. HITE-CT, as the authority establishing Connecticut's HIE, will encourage adoption by its participants and will itself comply with those principles related to HITE-CT's role in health information exchange. Specifically, these principles are:

1. Include provisions relating to security, privacy, data content, structures and format, vocabulary and transmission protocols

2. Limit the use and dissemination of an individual's Social Security number and require the encryption of any Social Security number provided by an individual

3. Require privacy standards no less stringent than the "Standards for Privacy of Individually Identifiable Health Information" established under HIPAA[25]

4. Require that individually identifiable health information be secure and that access to such information be traceable by an electronic audit trail

5. Be compatible with any national data standards in order to allow for interstate interoperability

6. Permit the collection of health information in a standard electronic format

7. Be compatible with the requirements for an electronic health information system

At the present time, Connecticut's HITEAC Legal / Policy Sub-committee members are undertaking a detailed inventory and analysis of the existing State laws that apply to privacy and security of personal health information. This analysis will support the identification and harmonization of the Federal and State legal and policy requirements that will enable appropriate health information exchange services to be developed in Connecticut.

The HITEAC Legal / Policy Sub-committee is considering the implementation of a hybrid model for patient consent that enforces opt-out for all data with the exception of most sensitive data or specially protected patient information. Patient consent for sensitive data will enforce opt-in requiring a written consent of the individual to protect the confidentiality of specially protected information, including sexually transmitted diseases, HIV/AIDS test results, viral hepatitis,

genetics, children's mental health and developmental disabilities, and adult mental health and developmental disabilities.

Connecticut is considering adopting a policy that requires the system that creates records for exchange, (e.g., Continuity of Care Document) to facilitate the identification of sensitive data disclosures of health information through the HITE-CT health information exchange.

9.2 Development of Policies, Rules and Trust Agreements

Connecticut feels that it is imperative to develop widely-accepted legal and business rules and uniform consent forms and procedures that will enable the exchange of health information for clinical purposes while assuring confidentiality and security.

HITE-CT will establish a process for development of Statewide policy guidance in the area of privacy and security, and a contractual framework for assuring adherence to the legal, business and technical rules that are developed through that process. In addition, HITE-CT plans to review and leverage the work done by eHealthCT in crafting the privacy and consent policies and trust agreements for the DSS HIE Pilot. These policies and agreements include:

- The Data Use and Reciprocal Support Agreement (DURSA) and the Business Associate Agreement (BAA) to be signed by all entities that participate in the HIE pilot. These documents are meant to clarify the responsibilities of all parties, including commitments to security and privacy practices. These contracts meet the current requirements of the federal HITECH legislation, and the same standard documents are meant to be executed by all HIE pilot participants

- The Universal Medical Records release Authorization (UMRRA) to be used by physicians, hospitals and other providers throughout the state. The UMRRA provides individuals with the ability to decide whether or not their information can be included in the eHealthCT system

HITE-CT will manage data quality and integrity by implementing a proactive, ongoing data quality strategy. Data will be managed according to institutionalized rules, policies and continual monitoring and published information will be accurate and clear with a demonstrable audit trail. The HITEAC Legal / Policy Sub-committee will provide a more complete proposal that addresses data collection and data access by purpose. In addition, Connecticut is considering providing enhance obligations upon participants HIE by contractually binding the participants to comply with its terms and conditions, including encryption and breach notification requirements.

9.3 Framework for Enforcement of Privacy and Security Policy

The HITECH Act establishes new security and privacy requirements for notifying patients in the event a breach does occur. Under HITECH, these requirements and previous HIPAA requirements are specifically extended to include providers' business associates, such as HIEs, vendors of Personal Health Records, and other service providers.

Over the next nine months, HITE-CT plans to leverage ONC guidance on 'nationally recognized standards' and on creation of HIE policies and regulations (e.g. Health Information Security and Privacy Collaboration, March 2009), and develop policies and legal agreements to govern the oversight of HITE-CT and enforcement and to guide technical services prioritized by the state. In addition, HHS Privacy and Security framework and HIPAA provides a well established

existing body of law for HITE-CT. The HIPAA preemption analysis, which is currently being updated in light of HIE needs, will provide input for a future legal framework for HITE-CT.

The HITE-CT will be governed by a board of directors that includes broad community representation. The HITE-CT intends to work collaboratively with Connecticut's Regional Extension Center to provide education to both users of the health information exchange and for individuals whose information may be subject of disclosure through the state HIE. Education will include explanations of the right that the individual has to opt-out of the system for all but sensitive data and the consent requirement.

9.4   Legal / Policy Summary

- **Privacy and Security is a High-Priority for the HITE-CT**

    o   The privacy and security of patient health information is of the highest possible concern in the development of HITE-CT as reflected in Connecticut's Public Act 10-117.

    o   The Legal and Policy Sub-committee is conducting a thorough analysis of procedures and standards for ensuring the privacy of patient data.

- **HITE-CT Policies, Rules and Trust Agreements**

    o   The policies, rules and agreements that will define how the HITE-CT operates must be created within the boundaries of all applicable law and national standards. Of particular importance will be determining patient consent. The HITE-CT plans to review and leverage the work done by eHealthCT in crafting the privacy and consent policies and trust agreements for the DSS HIE Pilot

- **Enforcement Framework**

    o   HHS Privacy and Security framework and HIPAA provides a well established existing body of law for HITE-CT. The HIPAA preemption analysis, which is currently being updated in light of HIE needs, will provide input for a future legal framework for HITE-CT.

10.0 Evaluation Approach

Connecticut is committed to demonstrating the progress to be achieved through HITE-CT by employing a robust evaluation program. The goal of the evaluation effort is to demonstrate the economic and quality value of health information exchange investments and the effects of these investments on providers and consumers, determine what is working and what needs to be improved, disseminate these lessons learned broadly within the state and establish processes for continuous improvements.

HITE-CT will work to define the details of the evaluation process as part of the Operational Plan. At a minimum, the evaluation process will include:

- A review of, and periodic revisions of, the State Strategic and Operational Plans after being submitted to ONC

- An annual evaluation that will be coordinated with the national program evaluation

- Compliance with reporting requirements specified in the State HIE Cooperative Agreement program plus additional reporting requirement identified during the development of the operational plan

- Reporting of performance metrics specified in the State HIE Cooperative Agreement program plus additional performance metrics identified during the development of the Operational Plan

- Coordination with national program evaluation and leverage of technical assistance from the Federal government in an effort to implement lessons learned that will ensure appropriate and secure HIE resulting in improvement in quality and efficiency

10.1 Reporting Requirements

The American Recovery and Reinvestment Act (ARRA) calls for the HITE-CT to submit program performance reports consistent with the HIE Cooperative Agreement Program. Figure 10 shows the initial reporting requirements for HITE-CT. This list will be augmented with program guidance and technical assistance from ONC on specific reporting requirements, performance and evaluation measures and methods to collect data and evaluate project performance.

Figure 10. Reporting Requirements

ONC Domain	Reporting Requirement
Governance	• Proportion of HITE-CT organization represented by public stakeholders • Proportion of HITE-CT represented by private sector stakeholders • HITE-CT representation including: government, public health, hospitals, employers, providers, payers and consumers • Designated governance role of the State Medicaid agency (DSS) in HITE-CT • HITE-CT's adoption of a Strategic Plan for Statewide HIT • HITE-CT's approval/implementation of operational plan for Statewide HIT • Status of HITE-CT meetings (minutes posted and meetings open to the public) • Designated governance role of regional HIE initiatives in HITE-CT
Finance	• Development/implementation status of financial policies and procedures consistent with state and federal requirements • Revenue received from both public and private organizations • Proportion of the sources of funding to advance Statewide HIE obtained from Federal assistance, State assistance, other charitable contributions and revenue from HIE services • From the charitable contributions listed above, proportion of funding that comes from health care providers, employers, health plans and others • Development of a business plan that includes a financial sustainability plan • HITE-CT's budget review with the oversight board on a quarterly basis • Compliance with the Single Audit requirements of OMB • Secure revenue stream to support sustainable business operations throughout and beyond the performance period
Technical Infrastructure	• Development/implementation of statewide technical architecture for the HIE according to HIE model(s) chosen by the HITE-CT • Integration of Connecticut's technical infrastructure with state-specific Medicaid management information systems • Integration of Connecticut's technical infrastructure with regional HIE • Proportion of health care providers in the State able to send electronic health information using components of the Statewide HIE technical

ONC Domain	Reporting Requirement
	infrastructure • Proportion of health care providers in the State able to receive electronic health information using components of the Statewide HIE Technical infrastructure
Business and Technical Operations	• Technical assistance available to those developing HIE services • HITE-CT's monitoring and planning activities for remediation of HIE as necessary throughout the State • Percent of health care providers have access to broadband • Development/implementation of Statewide shared services or other Statewide technical resources to address business and technical operations
Legal/ Policy	• Development/implementation of privacy policies and procedures consistent with State and Federal requirements • Number of trust agreements that have been signed • Incorporation of provisions in privacy policies, procedures and trust agreements allowing for public health data use

10.2 Performance Measures

Figure 11 shows the measures applicable to the implementation phase of the cooperative agreement as defined in the ONC State HIE Cooperative Agreement Program. Connecticut understands that these are an initial set of measures intended to provide a State-specific and national perspective on the degree of provider participation in the HIE and the degree to which pharmacies and clinical laboratories are active trading partners in the HIE. E-Prescribing and laboratory results reporting are two of the most common types of an HIE within and across states. Additional performance measures will be identified as part of the development of the operational plan.

Figure 11. Initial Implementation Performance Measures

Performance Measures	• Percent of providers participating in HIE services enabled by Connecticut's statewide directories or shared services[26]
	• Percent of pharmacies serving people within Connecticut that are actively supporting electronic prescribing and refill requests
	• Percent of clinical laboratories serving people within Connecticut that are actively supporting electronic ordering and results reporting

Connecticut will also be required to report on additional measures that will indicate the degree of provider participation in the HITE-CT particularly those required for meaningful use. Future areas for performance measures will include but are not limited to:

- Providers' use of HIE to exchange Continuity of Care Documents

- Exchange of clinical data within the Statewide HIE automatically feeding public health registries and reporting needs

- Access to, and integration with, data from multiple sources, (e.g., State systems, RxHub, etc.)

- User access to personal health records

10.3 Evaluation Approach Summary

- **Reporting Requirements**

  o HITE-CT must be able to meet all reporting requirements for the cooperative agreement program and also other Federal and State requirements

- **Evaluation and Performance Measures**

  o The implementation, operation, and impact of HITE-CT will be monitored closely and continuously in order to demonstrate effective deployment, effectiveness and results. Performance measures will be selected and continuously refined and augmented to meet Connecticut's vision and strategic goals for health information exchange

11.0 HITE-CT Strategic Plan Roadmap and Recommendations

After the formal commencement of the HITE-CT in January 2011, the Authority is planning an aggressive integration and rollout schedule with three releases in three years. The strategic plan proposed schedule is shown in Figure 12 and further described in the Figure 13 below. The Operational Plan will further refine the schedule into a detailed work plan.

Figure 12. HITE-CT Strategic Plan Roadmap
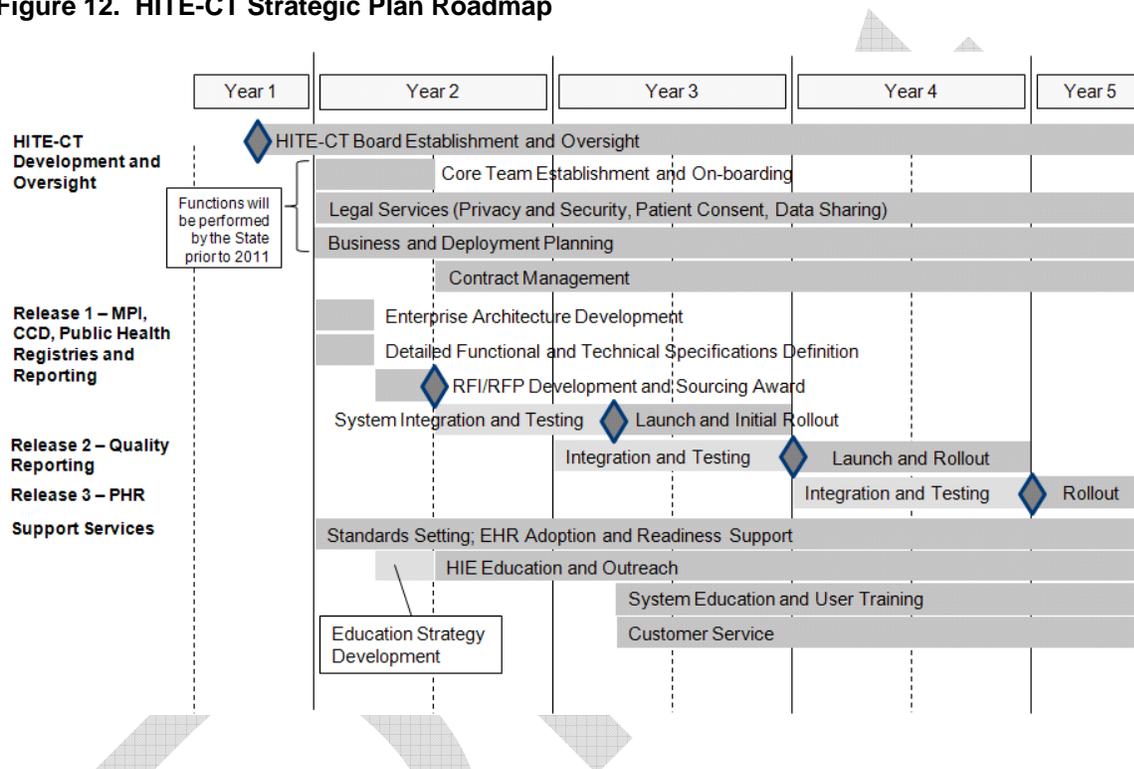
Figure 13. HITE-CT Strategic Plan Roadmap Details

RHIO Development and Oversight
HITE-CT Board of Directors Establishment and Oversight
• Per the legislation enabling the HITE-CT, establish the HITE-CT to develop and support the HIE
• Define HITE-CT's governance structure, including role s and responsibilities and processes to: provide oversight for entire HITE-CT initiative; establish the appropriate mechanisms for stakeholder input; provide oversight for planning and operations and make operational decisions; and establish channels for existing or future organizations, e.g., REC, HIEs, hospital organizations to provide stakeholder representation
Core Team Establishment and On-boarding
• Staff the Authority with leadership and staff members in anticipation of system development and deployment

Legal Services (Privacy and Security, Patient Consent, Data Sharing)

• Create an HIE policy framework that will ensure policies:
 	
  o Meet standards of definition and consistency
 	
  o Are comprehensive across the needs of the Authority and HITE-CT (e.g. privacy and security, patient consent, data sharing etc.)
 	
  o Are reviewed and refreshed in a timely manner, and have suitable and effective enforcement methods and compliance metrics defined
 	
• Define principles for data ownership by type of data and population impacted (including special population) and determine:
 	
  o Usage allowed by type of data and population
 	
  o Type of consent opt-in vs. opt-out
 	
  o When sharing agreements are required
 	
  o Privacy and security requirements
 	
• Create an oversight and enforcement framework and identify compliance metrics and associated sanctions
 	
• Identify requirements to meet security and privacy policies and ensure compliance with Federal and State policies for data protection

Business Deployment Planning
• Establish standards governance structure and supporting processes to identify requirements for standards, review of established and adopted standards for leveragability, and monitoring of adoption of these standards • Determine priorities for the implementation of HITE-CT portfolio of product and services and use readiness information available to devise a phased implementation strategy • Conduct segmentation analysis of the customer base and markets for each service area • Build measurement capability into the HITE-CT that would enable the State to report on Government Performance Reporting Act (2003) and ARRA-specific measures and Cooperative Agreement-specific reporting aligned with demonstrating meaningful use
Contract Management
• Establish the appropriate processes and mechanisms to conduct oversight and management of vendor contracts and performance
Release 1 – MPI, CCD, Public Health Registries and Reporting
Enterprise Architecture Development
• Create enterprise architecture and associated processes for the HITE-CT using industry standards and identify the skill sets required
Detailed Functional and Technical Specifications Definition
• Develop detailed specifications to define the technical and functional aspects of the technology supporting the HIE
RFI/RFP Development and Sourcing Award

- In collaboration with the State's Procurement Office, develop procurement strategy / roadmap that includes identification of existing usable contracts by HITE-CT

System Integration and Testing; Launch and Initial Rollout

- Either in-house or through a vendor, develop the technology necessary to support the HIE, test the system and roll the system out to all clients

Release 2 – Quality Reporting / Gaps in Care Reporting

Integration and Testing; Launch and Rollout

- Develop additional functionality on the system as part of the second phase of the HIE development, including Quality and Gaps in Care Reporting, and rollout the system to current and new users

Release 3 – PHR

Integration and Testing; Launch and Rollout

- Develop additional functionality on the system as part of the third phase of the HIE development, including Personal Health Records, and rollout the system to current and new users

Support Services

EHR Adoption and Readiness Support

- Establish collaboration between HITE-CT and Connecticut's Regional Extension Center to create awareness and education, provide certification of interfaces and support, provide education on meaningful use to future HIE participants and build readiness understanding and outreach.

- Build tools for determining and improving readiness of potential participants

HIE Education and Outreach

- Concurrent with the development of the HIE and with other education channels, proactively educate providers, hospitals and the public about the existence, benefits of, and use of, the HIE

- Develop timely public education/communication for a successful HIE implementation and the sustainability of the HIE. Key activities for consideration include: defining audience, types of communication channels and sequencing of communication artifacts; identifying trusted messengers (e.g., patients tend to trust their health care providers); researching major concerns and potential legal challenges to understand and develop mitigation strategy, and working with legislators to establish strategy for diffusing potential issues

- Design a Public Awareness, Education and Participation Plan that includes understanding of stakeholder groups, view points and needs; tailoring of communication around the value proposition of the HIE to each stakeholder group; developing and sharing case studies that demonstrate the value of the HIE; and coordinate with legal and policy domain to ensure strategy is in alignment with consent decision

User Education and Training

- Concurrent with release rollouts, start training programs for user to develop client capabilities on, and comfort with, the system

12.0 Appendices

12.1 Appendix – Definition of Terms and Acronyms

American Recovery and Reinvestment Act of 2009 (ARRA)**:** This Act is a $787.2 billion
stimulus measure, signed by President Barack Obama on February 17, 2009 that provides aid
to states and cities, funding for transportation and infrastructure projects, expansion of the
Medicaid program to cover more unemployed workers, health IT funding, and personal and
business tax breaks, among other provisions designed to "stimulate" the economy.

BAA: Business Associate Agreement.

Centers for Medicare and Medicaid Services (CMS): A federal agency within the United
States Department of Health and Human Services that administers the Medicare program and
works in partnership with state governments to administer Medicaid, the State Children's Health
Insurance Program (SHIP), and health insurance portability standards.

CEO: Chief Executive Officer.

CMS: Center for Medicare and Medicaid Services.

CHQC: Connecticut Health Quality Cooperative.

CHA: Connecticut Hospital Association.

CHIN: Connecticut Health Information Network.

CHIP: Children's Health Insurance Program.

Connecticut State Health Information Exchange Cooperative Agreement Program: A
program established as part of the ARRA through the ONC. The purpose of this program is to
continuously improve and expand HIE services over time to reach all health care providers in an
effort to improve the quality and efficiency of health care. Cooperative agreement recipients
evolve and advance the necessary governance, policies, technical services, business
operations and financing mechanisms for HIE over a four year performance period. This
program is intended to build off of existing efforts to advance regional and state level HIE while
moving towards nationwide interoperability.

CPMRS: Connecticut Prescription Monitoring and Reporting System.

DMHAS: Department of Mental Health & Addiction Services.

DPH: Department of Public Health.

DSS: Department of Social Services.

DURSA: Data Use and Reciprocal Support Agreement.

Electronic Health Record (EHR): As defined in the ARRA, an Electronic Health Record (EHR)
means an electronic record of health-related information on an individual that includes patient
demographic and clinical health information, such as medical histories and problem lists; and
has the capacity to provide clinical decision support; to support physician order entry; to capture
and query information relevant to health care quality; and to exchange electronic health
information with, and integrate such information from other sources.

ELR: Electronic Lab Reporting.

EMR: Electronic Medical Record.

Electronic Prescribing (ePrescribing): A type of computer technology whereby physicians use handheld or personal computer devices to review drug and formulary coverage and to transmit prescriptions to a printer or to a local pharmacy. E-prescribing software can be integrated into existing clinical information systems to allow physician access to patient-specific information to screen for drug interactions and allergies.

EWTA: Enterprise Wide Technical Architecture.

FQHC: Federally Qualified Health Center.

Health Information Exchange (HIE): As defined by the Office of the National Coordinator and the National Alliance for Health Information Technology (NAHIT), Health Information Exchange means the electronic movement of health-related information among organizations according to nationally recognized standards.

HIT: Health Information Technology.

HITEAC: Health Information Technology and Exchange Advisory Committee

Health Information for Economic and Clinical Health (HITECH) Act: Collectively, health information technology provisions included at Title XIII of Division A and Title IV of Division B of the ARRA.

HITE-CT: Health Information Technology Exchange of Connecticut.

Health Information Organization: An organization that oversees and governs the exchange of health-related information among organizations according to nationally recognized standards.

Health Information Technology (HIT): As defined in the ARRA, Health Information Technology means hardware, software, integrated technologies or related licenses, intellectual property, upgrades, or packaged solutions sold as services that are designed for or support the use by health care entities or patients for the electronic creation, maintenance, access, or exchange of health information.

Health Information Technology Regional Extension Center (REC): As set out in the ARRA, Regional Health Information Technology Extension Centers will be established and may qualify for funding under ARRA to provide technical assistance and disseminate best practices and other information learned from the Health Information Technology Research Center to aid health care providers with the adoption of health information technology.

Health Insurance Portability and Accountability Act (HIPAA): An Act enacted by Congress in 1996. Title I of HIPAA protects health insurance coverage for workers and their families when they change or lose their jobs. Title II of HIPAA, known as the Administrative Simplification (AS) provisions, requires the establishment of national standards for electronic health care transactions and national identifiers for providers, health insurance plans, and employers. The Administration Simplification provisions also address the security and privacy of health data. The standards are meant to improve the efficiency and effectiveness of the nation's health care system by encouraging the widespread use of electronic data interchange in the U.S. health care system.

HUSKY: Health care for Uninsured Kids and Youth.

IHS: Indian Health Service

Interface: A means of interaction between two devices or systems that handle data.

Interoperability: Interoperability means the ability of health information systems to work together within and across organizational boundaries in order to advance the effective delivery of healthcare for individuals and communities.

LIMS: Lab Information Management Systems.

MPI: Master Patient Index.

Meaningful Use: Use of Health Information Technology meeting the following requirements: (i) use of a certified EHR technology in a meaningful manner, which includes the use of electronic prescribing; (ii) use of a certified EHR technology that is connected in a manner that provides for the electronic exchange of health information to improve the quality of health care; and (iii) use of a certified EHR technology to submit information on clinical quality and other measures as selected by the Secretary of HHS.

MMIS: Medicaid Management Information System.

Nationwide Health Information Network (NHIN): A national effort to establish a network to improve the quality and safety of care, reduce errors, increase the speed and accuracy of treatment, improve efficiency, and reduce healthcare costs.

NEJM: New England Journal of Medicine.

ONC: Office of the National Coordinator.

PHIN: Public Health Information Network

PHR: Personal Health Record.

PRATS: Pregnancy Risk Assessment Tracking System.

PRAMS: Pregnancy Risk Assessment Monitoring System.

Privacy: In December 2008, the Office of the National Coordinator for Health IT released its "Nationwide Privacy and Security Framework For Electronic Exchange of Individually Identifiable Health Information," ("Framework") in which it defined privacy as, "An individual's interest in protecting his or her individually identifiable health information and the corresponding obligation of those persons and entities that participate in a network for the purposes of electronic exchange of such information, to respect those interests through fair information practices." This language contrasts with the definition of privacy included in the National Committee on Vital and Health Statistics' ("NCVHS") June 2006 report, entitled, "Privacy and Confidentiality in the Nationwide Health Information Network." In its report, NCVHS recommended the following definition for "privacy": "Health information 'privacy' is an individual's right to control the acquisition, uses, or disclosures of his or her identifiable health data."

Provider: A person who performs services upon other persons for the purpose of bettering their physical or mental state. Professions encompassed in this include physicians, physician assistants, dentists, nurses, nurse practitioners, pharmacists, dietitians, therapists, psychologists, chiropractors, optometrists, paramedics, and a wide variety of others.

REC: Regional Extension Center.

Safe Harbor: An establishment that allows for protection against unwanted changes from outside entities.

Security: The Health Insurance Portability and Accountability Act Security rule defines

"Security or Security measures" as "encompass[ing] all of the administrative, physical, and technical safeguards in an information system.

SMHP: State Medicaid Health Information Technology Plan.

SOA: Service Oriented Architecture.

Sourced: Refers to the selection and engagement of a vendor for the development, deployment or management of PHIX technical infrastructure. Sourced can refer to a variety of contracting vehicles such as fixed-term contracts or fully outsourced services provided by a vendor in entirety.

UMRRA: Universal Medical Records Release Authorization.

U.S. Department of Health and Human Services (HHS): The federal government department responsible for protecting the health of all Americans and providing essential human services. HHS, through CMS, administers the Medicare (health insurance for elderly and disabled Americans) and Medicaid (health insurance for low-income people) programs, among others. The Office of the National Coordinator for Health Information Technology is also organizationally located within the Office of the Secretary of HHS.

U.S. Department of Health and Human Services – Office of the National Coordinator for Health Information Technology (ONC): This office serves as principal advisor to the Secretary of HHS on the development, application, and use of health information technology; coordinates HHS's health information technology policies and programs internally and with other relevant executive branch agencies; develops, maintains, and directs the implementation of HHS' Strategic Plan to guide the nationwide implementation of interoperable health information technology in both the public and private health care sectors, to the extent permitted by law; and provides comments and advice at the request of OMB regarding specific Federal health information technology programs. ONC was established within the Office of the Secretary of HHS in 2004 by Executive Order 13335.

VHR: Virtual Health Record.

WIC: Women, Infants and Children.

12.2 Appendix – HITEAC Advisory Council and HITE-CT Board of Directors Membership

Current HITEAC Membership and State Agency Representatives

Member	Affiliation
Michael Fedele	Lieutenant Governor Office of the Lieutenant Governor State Capitol 210 Capitol Avenue, Room 304 Hartford, CT 06106
Thomas Agresta, M.D.	Associate Professor and Director of Medical Informatics Department of Family Medicine University of Connecticut School of Medicine Farmington, CT
Lisa M. Boyle	Robinson & Cole, LLP 280 Trumbull Street Hartford, CT 06103
Daniel P. Carmody	CIGNA Corporation 900 Cottage Grove Road Bloomfield, CT 06002
Kevin Carr, M.D.	Waterbury Hospital Primary Care 64 Robbins Street Waterbury, CT 06721
Peter Courtway	Chief Information Officer Danbury Hospital 24 Hospital Avenue Danbury, CT 06810
Kenneth Dardick, M.D.	Mansfield Family Practice 34 Professional Park Road Storrs, CT 06268
Michael Hudson	President, Northeast Region, Health Care Management Aetna
Nancy Kim, M.D.	Instructor, General Internal Medicine Yale University School of Medicine Staff Physician, VA CT Healthcare System New Haven, CT
Mark Masselli	President and CEO Community Health Center, Inc. 635 Main Street Middletown, CT 06457

HITEAC State Agency Representatives

Representative	Representing
Rick Bailey	Department of Information Technology
John Gadea, Jr.	Department of Consumer Protection
Jamie Mooney	Office of the Healthcare Advocate
J. Robert Galvin, M.D./Meg Hooper	Department of Public Health
Cristine Vogel	DPH/Office of Health Care Access
Barbara Parks Wolf	Office of Policy and Management
Marcia Mains	Department of Social Services

Future HITE-CT Board of Directors

Appointer	Representing
The Lieutenant Governor, or his or her designee	His or her self
The Commissioner of Public Health, or his or her designee (designated chairperson of the board)	His or her self
The Commissioner of Social Services, or his or her designee	His or her self
The Commissioner of Consumer Protection, or his or her designee	His or her self
The Chief Information Officer of the Department of Information Technology, or his or her designee	His or her self
The Governor	A representative of a medical research organization
The Governor	An insurer or representative of a health plan
The Governor	An attorney with background and experience in the field of privacy, health data security or patient rights
The president pro tempore of the Senate	One with background and experience with a private sector health information exchange or health information technology entity
The president pro tempore of the Senate	One with expertise in public health
The president pro tempore of the Senate	A physician licensed under chapter 370 of the general statutes who works in a practice of not more than ten physicians and who is not employed by a hospital, health network, health plan, health system, academic institution or university
The speaker of the House of Representatives	A representative of hospitals, an integrated delivery network or a hospital association

Appointer	Representing
The speaker of the House of Representatives	One with expertise with federally qualified health centers
The speaker of the House of Representatives	A consumer or consumer advocate
The majority leader of the Senate	A primary care physician whose practice utilizes electronic health records
The majority leader of the House of Representatives	A consumer or consumer advocate
The minority leader of the Senate	A pharmacist or a health care provider utilizing electronic health information exchange
The minority leader of the House of Representatives	A large employer or a representative of a business group
The Secretary of the Office of Policy and Management (ex-officio, nonvoting)	His or her self
The Healthcare Advocate (ex-officio, nonvoting)	His or her self

12.3 Appendix – State HIT Assets

Databases

The Department of Public Health maintains a large and diverse set of data systems (55 databases have been identified[27]) covering a wide range of Connecticut health information including the following areas:

- Vital records on Connecticut residents including the state-wide registry of births, deaths, marriages, paternity and adoptions. The new Electronic Death Registry System using Netsmart will provide coordination with reporting hospitals, nursing homes, physicians, and municipal registrars of vital statistics to implement the immediate reporting of deaths in Connecticut

- Disease-related screening and surveillance is moving to Maven (a Commercial Off-The-Shelf [COTS] package) to support disease surveillance which is implemented for vaccine-preventable diseases, occupational health, environmental public health metadata, HEDSS, influenza, lyme disease, vulnerable populations and HASS (infectious disease admissions - excluding ED).

- The system is now planning to include childhood/adult lead poisoning, the immunization registry, Varicella and TB messaging. Newborn screening for genetics, defects and hearing is also moving to Maven and outbreak management capacity is planned for implementation in late 2010.

- Maven receives data via HL7 messages using the PHIN messaging infrastructure including Orion Rhapsody integration engine and the CDC NEDSS brokering tool. DPH collects data and transmits the de-identified data monthly to the CDC database through a CDC-supplied system for Electronic HIV/Aids Registry.

- The Department also maintains an EMS/Trauma Registry System for EMS providers to upload data for all 911 calls and allows trauma hospitals to upload trauma data. A State tumor registry contains data on reportable tumors in CT residents and contains over 500,000 records dating back to1973. Data from this Registry are reported annually to the National Cancer Institute

- Analysis and reporting on a variety of health topics including population statistics, annual vital statistics, hospital discharge patterns, and hospital quality of care indicators, health disparities, and morbidity and mortality indicator trends

Licensing of Facilities and Providers

The State recently migrated to a cross-agency licensing platform that will soon encompass all State public health practitioners and facilities. It was developed by the Department of Public Health in coordination with the Connecticut Department of Consumer Protection (DCP)

Other Systems and Uses

- Connecticut uses systems to administer programs such as the Women, Infants and Children programs

- Laboratory Information Management System - A ChemWare product currently being implemented that will provide real-time laboratory results to the private sector, State and Federal officials. This will use the PHIN messaging infrastructure

- Office of Health Care Access (OHCA) maintains databases containing data on the delivery of medical care and financial information from Connecticut's hospitals including patient level data obtained from discharge records collected from all 30 of Connecticut's acute care hospitals. OHCA receives these data semi-annually from the Connecticut Hospital Association/CHIME with names removed

A more comprehensive list of DPH Health data systems can be found in "*Connecticut Health Database Compendium: A Profile of Selected Databases Maintained by The Connecticut Department of Public Health, Third Edition*".

Connecticut Medical Assistance Program

The Department of Social Services has developed a portal with self-service features to support a number of Connecticut Medical Assistance Programs including Medicaid, the State-Administered General Assistance (SAGA) program, the Connecticut DSS Pharmaceutical Assistance Contract to the Elderly and Disabled (ConnPACE) and the Connecticut AIDS Drug Assistance Program (CADAP).

In 2008, DSS implemented HP's federally certified Medicaid Management Information System, interChange, for the services provided under Medicaid Fee-For-Service (FFS) and the Connecticut AIDS Drug Assistance Program, ConnPACE, the Katie Beckett Waiver Program, SAGA, the Connecticut Home Care Program and the Connecticut Behavioral Health Partnership Program.

HP provides full fiscal agent services including claims processing, provider relations and enrollment, ConnPACE participant relations and enrollment, Federal and State financial management reporting and surveillance and utilization review reporting to DSS. Access is provided to the CT interChange MMIS for providers and the public via a web portal.

The Automated Eligibility Verification System (AEVS) provides a comprehensive source of DSS client eligibility information to all enrolled providers. By using any method of the AEVS to verify client eligibility, the provider can access important information including: third party insurance, Medicare coverage, waiver program eligibility, managed care eligibility, and Medicare covered services only information.

The Eligibility Management System manages and provides current Medicaid eligibility information to be used by the MMIS for claims adjudication, or for providing benefit coverage information to health care providers prior to providing treatment. The eligibility information is also used by physicians for Electronic Prescribing (ePrescribing).

DSS' Medicaid ePrescribing system (provided by HP) was implemented in Fall 2009 and is a certified payer in the Surescripts network. Surescripts electronically routes up-to-date patient eligibility, medication history, and formulary information between the MMIS and the requesting Medicaid enrolled provider. The Medicaid provider can then make informed decisions relative to prescribing the appropriate medication for the patient. The provider can then submit an electronic prescription via Surescripts to the patients' pharmacy for dispensing.

12.4 Appendix – Danbury Hospital's HealthLink

Danbury is a geographically distinct area of Connecticut. Due to this geographic segregation in the State, local practices and Danbury Hospital are inherently tied together. Danbury Hospital, in cooperation with many of the area practices, laboratories and pharmacies, have developed a working HIE. The system now incorporates over 250 providers, 500 support staff and 500,000 patient records which equates to approximately one-third of the medical community in the area.

The program is a suite of products that strive to improve quality, reduce health care costs and facilitate business growth. It serves three purposes: A HIE through a patient-centric technology platform; a repository for critical patient information, including medications, allergies, diagnoses, test results, and others; and a physician toolkit to easily allow ordering and tracking of tests, e-prescribing, access to clinical documentation and communications between providers involved in a patient's treatment.

The technology of the HIE is robust and flexible, with the following benefits:

- The platform is built on standards-based technologies;

- It has achieved interoperability with existing and emerging data standards;

- It can support both centralized and federated models;

- The solution is light-weight – a provider needs only access to the Internet to access;

- Will connect to the State HIN and NHIN when available;

- Provides access to DICOM images;

- Provides patient privacy and individual choice; and

- Is HIPAA-compliant.

The HIE incorporates several services, including:

- HealthLink Print/Fax - Print/fax capabilities for providers who do not have electronic capabilities;

- HealthLink VHR - A Virtual Health Record (VHR); a migration from their legacy system which has 80-90% adoption;

- HealthLink eRx - ePrescribing, with a goal for 80% adoption by the end of 2010 and 100% by the end of 2011;

- HealthLink EMR - An Electronic Medical Record including an "EHR lite" offering;

- HealthLink EMR Connector - A last mile two-way task interface; and

- HealthLink Image Exchange - An imaging and reports repository exchange, which is expected to launch later in 2010.

The success in adoption has been partially due to negotiated contracts with multiple vendors for EHR Connector interfaces at a significantly reduced price. The negotiated prices has allowed practices to integrate with the HIE for considerably less than custom designed interfaces and has barred any one vendor from blocking other vendors from service.

The Program has identified the following benefits for the community:

Enhance patient safety through e-Rx

- o Drug interaction and allergy checking;

- o Legible prescriptions;

- o Spans all settings, Inpatient, Emergency Department, Clinics, Practices;

- o Improve office workflow efficiency; and

- o Less paper to handle, drives tasking within the practice.

Reduce costs

- o Eliminate paper charts and associated overhead expenses for providers;

- o Reduces duplicative testing for patients;

- o Reduces costs for Medicare, Medicaid, Insurers, Consumers;

- o Easily collaborate with other health care stakeholders in the community;

- o Immediately route clinic documents to treating providers; and

- o Speeds delivery of care and care decision making.

The consent model meets the needs of all the stakeholders that are involved in the process. All information is tracked or stored at the central repository, allowing access at any time by any authorized provider or entity, but also allows patients to opt-out of the project if they so choose.

12.5 Appendix – The Medicaid Transformation Project: A Health Information Exchange pilot through the Department of Social Services

Initially funded by a Medicaid Transformation Grant ($1.35M), the program aims to link Federally Qualified Health Centers (FQHCs), acute care hospitals, and private physicians within the State, and eventually between the HIE and the National Health Information Network (NHIN) for continuity of care. This project is being run by eHealthCT.

Several key assets have been developed already to support this effort, including:

- A technology platform developed cooperatively by Hartford Hospital and Misys Open Source Solutions, hosted at the Connecticut Hospital Association

- Privacy policies and a Universal Medical Records Release Authorization (UMRRA) for the use of providers, developed by eHealthCT through its legal, health care, State and consumer advocates constituents

- A Data Use and Reciprocal Support Agreement (DURSA) and Business Associate Agreement (BAA) for all participant entities in the HIE

- Online and written education collateral for providers and consumers for the purpose, processes, benefits and risks of participating in the HIE

The pilot is being developed in three general areas: New London, Hartford and Waterbury.

In the New London area, Laurence & Memorial Hospital is working with Community Health Centers, Inc. (CHC) to connect their respective EMRs. This is expected to assist the transition of care between the local clinics and the hospital.

In Hartford, Hartford Hospital and St. Francis Hospital are coordinating EMRs using a Misys open source software to develop a coordinated HIE. Both hospitals will benefit due to the overlap of patients between the two hospitals.

In Waterbury, transition of care for pregnant women from the Staywell Community Health Center to Naugatuck Valley OBGYN is planned via the pilot.

Other entities have expressed interest, such as Oak Hill Residential Services, who have group homes and assisted living facilities. Because the facilities do not staff physicians, they transport residents to local hospitals for care. A migration from paper-based records could significantly benefit both the facilities and the hospital.

12.6 Appendix –Connecticut Public Act No. 10-117

The following excerpt includes the sections from Connecticut Public Act No. 10-117 regarding the creation of the Health Information Exchange of Connecticut:

Sec. 82. (NEW) (Effective from passage) (a) There is hereby created as a body politic and corporate, constituting a public instrumentality and political subdivision of the state created for the performance of an essential public and governmental function, the Health Information Technology Exchange of Connecticut, which is empowered to carry out the purposes of the authority, as defined in subsection (b) of this section, which are hereby determined to be public purposes for which public funds may be expended. The Health Information Technology Exchange of Connecticut shall not be construed to be a department, institution or agency of the state.

(b) For purposes of this section, sections 83 to 85, inclusive, of this act and section 19a-25g of the general statutes, as amended by this act, "authority" means the Health Information Technology Exchange of Connecticut and "purposes of the authority" means the purposes of the authority expressed in and pursuant to this section, including the promoting, planning and designing, developing, assisting, acquiring, constructing, maintaining and equipping, reconstructing and improving of health care information technology. The powers enumerated in this section shall be interpreted broadly to effectuate the purposes of the authority and shall not be construed as a limitation of powers. The authority shall have the power to:

(1) Establish an office in the state;

(2) Employ such assistants, agents and other employees as may be necessary or desirable, which employees shall be exempt from the classified service and shall not be employees, as defined in subsection (b) of section 5-270 of the general statutes;

(3) Establish all necessary or appropriate personnel practices and policies, including those relating to hiring, promotion, compensation, retirement and collective bargaining, which need not be in accordance with chapter 68 of the general statutes, and the authority shall not be an employer, as defined in subsection (a) of section 5-270 of the general statutes;

(4) Engage consultants, attorneys and other experts as may be necessary or desirable to carry out the purposes of the authority;

(5) Acquire, lease, purchase, own, manage, hold and dispose of personal property, and lease, convey or deal in or enter into agreements with respect to such property on any terms necessary or incidental to the carrying out of these purposes;

(6) Procure insurance against loss in connection with its property and other assets in such amounts and from such insurers as it deems desirable;

(7) Make and enter into any contract or agreement necessary or incidental to the performance of its duties and execution of its powers. The contracts entered into by the authority shall not be subject to the approval of any other state department, office or agency. However, copies of all contracts of the authority shall be maintained by the authority as public records, subject to the proprietary rights of any party to the contract;

(8) To the extent permitted under its contract with other persons, consent to any termination, modification, forgiveness or other change of any term of any contractual right, payment, royalty, contract or agreement of any kind to which the authority is a party;

(9) Receive and accept, from any source, aid or contributions, including money, property, labor and other things of value;

(10) Invest any funds not needed for immediate use or disbursement in obligations issued or guaranteed by the United States of America or the state and in obligations that are legal investments for savings banks in this state;

(11) Account for and audit funds of the authority and funds of any recipients of funds from the authority;

(12) Sue and be sued, plead and be impleaded, adopt a seal and alter the same at pleasure;

(13) Adopt regular procedures for exercising the power of the authority not in conflict with other provisions of the general statutes; and

(14) Do all acts and things necessary and convenient to carry out the purposes of the authority.

(c) (1) The Health Information Technology Exchange of Connecticut shall be managed by a board of directors. The board shall consist of the following members: The Lieutenant Governor, or his or her designee; the Commissioners of Public Health, Social Services and Consumer Protection, or their designees; the Chief Information Officer of the Department of Information Technology, or his or her designee; three appointed by the Governor, one of whom shall be a representative of a medical research organization, one of whom shall be an insurer or representative of a health plan and one of whom shall be an attorney with background and experience in the field of privacy, health data security or patient rights; three appointed by the president pro tempore of the Senate, one of whom shall have background and experience with a private sector health information exchange or health information technology entity, one of whom shall have expertise in public health and one of whom shall be a physician licensed under chapter 370 of the general statutes who works in a practice of not more than ten physicians and who is not employed by a hospital, health network, health plan, health system, academic institution or university; three appointed by the speaker of the House of Representatives, one of whom shall be a representative of hospitals, an integrated delivery network or a hospital association, one of whom who shall have expertise with federally qualified health centers and one of whom shall be a consumer or consumer advocate; one appointed by the majority leader of the Senate, who shall be a primary care physician whose practice utilizes electronic health records; one appointed by the majority leader of the House of Representatives, who shall be a consumer or consumer advocate; one appointed by the minority leader of the Senate, who shall be a pharmacist or a health care provider utilizing electronic health information exchange; and one appointed by the minority leader of the House of Representatives, who shall be a large employer or a representative of a business group. The Secretary of the Office of Policy and Management and the Healthcare Advocate, or their designees, shall be ex-officio, nonvoting members of the board. The Commissioner of Public Health, or his or her designee, shall serve as the chairperson of the board.

(2) All initial appointments to the board shall be made on or before October 1, 2010. The initial term for the board members appointed by the Governor shall be for four years. The initial term for board members appointed by the speaker of the House of Representatives and the majority leader of the House of Representatives shall be for three years. The initial term for board members appointed by the minority leader of the House of Representatives and the minority leader of the Senate shall be for two years.

The initial term for the board members appointed by the president pro tempore of the Senate and the majority leader of the Senate shall be for one year. Terms shall expire on September thirtieth of each year in accordance with the provisions of this subsection. Any vacancy shall be filled by the appointing authority for the balance of the unexpired term. Other than an initial term, a board member shall serve for a term of four years. No board member, including initial board members, may serve for more than two terms. Any member of the board may be removed by the appropriate appointing authority for misfeasance, malfeasance or willful neglect of duty.

(3) The chairperson shall schedule the first meeting of the board, which shall be held not later than November 1, 2010.

(4) Any member appointed to the board who fails to attend three consecutive meetings or who fails to attend fifty per cent of all meetings held during any calendar year shall be deemed to have resigned from the board.

(5) Notwithstanding any provision of the general statutes, it shall not constitute a conflict of interest for a trustee, director, partner, officer, stockholder, proprietor, counsel or employee of any person, firm or corporation to serve as a board member, provided such trustee, director, partner, officer, stockholder, proprietor, counsel or employee shall abstain from deliberation, action or vote by the board in specific respect to such person, firm or corporation. All members shall be deemed public officials and shall adhere to the code of ethics for public officials set forth in chapter 10 of the general statutes.

(6) Board members shall receive no compensation for their services, but shall receive actual and necessary expenses incurred in the performance of their official duties.

(d) The board shall select and appoint a chief executive officer who shall be responsible for administering the authority's programs and activities in accordance with policies and objectives established by the board. The chief executive officer shall serve at the pleasure of the board and shall receive such compensation as shall be determined by the board. The chief executive officer (1) may employ such other employees as shall be designated by the board of directors; and (2) shall attend all meetings of the board, keep a record of all proceedings and maintain and be custodian of all books, documents and papers filed with the authority and of the minute book of the authority.

(e) The board shall direct the authority regarding: (1) Implementation and periodic revisions of the health information technology plan submitted in accordance with the provisions of section 74 of public act 09-232, including the implementation of an integrated state-wide electronic health information infrastructure for the sharing of electronic health information among health care facilities, health care professionals, public and private payers, state and federal agencies and patients; (2) appropriate protocols for health information exchange; and (3) electronic data standards to facilitate the development of a state-wide integrated electronic health information system, as defined in subsection (a) of section 19a-25d of the general statutes, for use by health care providers and institutions that receive state funding. Such electronic data standards shall: (A) Include provisions relating to security, privacy, data content, structures and format, vocabulary and transmission protocols; (B) limit the use and dissemination of an individual's Social Security number and require the encryption of any Social Security number provided by an individual; (C) require privacy standards no less stringent than the "Standards for Privacy of Individually Identifiable Health Information" established under the Health Insurance Portability and Accountability Act of 1996, P. L. 104-191, as amended from time to time, and contained in 45 CFR 160, 164; (D) require that individually identifiable health information be secure and that access to such information

be traceable by an electronic audit trail; (E) be compatible with any national data standards in order to allow for interstate interoperability, as defined in subsection (a) of section 19a-25d of the general statutes; (F) permit the collection of health information in a standard electronic format, as defined in subsection (a) of section 19a-25d of the general statutes; and (G) be compatible with the requirements for an electronic health information system, as defined in subsection (a) of section 19a-25d of the general statutes.

(f) Applications for grants from the authority shall be made on a form prescribed by the board. The board shall review applications and decide whether to award a grant. The board may consider, as a condition for awarding a grant, the potential grantee's financial participation and any other factors it deems relevant.

(g) The board may consult with such parties, public or private, as it deems desirable in exercising its duties under this section.

(h) Not later than February 1, 2011, and annually thereafter until February 1, 2016, the chief executive officer of the authority shall report, in accordance with section 11-4a of the general statutes, to the Governor and the General Assembly on (1) any private or federal funds received during the preceding year and, if applicable, how such funds were expended, (2) the amount and recipients of grants awarded, and (3) the current status of health information exchange and health information technology in the state.

Sec. 83. (NEW) (Effective from passage) (a) The Health Information Technology Exchange of Connecticut may establish or designate one or more subsidiaries for the purpose of creating, developing, coordinating and operating a state-wide health information exchange, or for such other purposes as prescribed by resolution of the authority's board of directors, which purposes shall be consistent with the purposes of the authority. Each subsidiary shall be deemed a quasi-public agency for purposes of chapter 12 of the general statutes. The authority may transfer to any such subsidiary any moneys and real or personal property. Each such subsidiary shall have all the privileges, immunities, tax exemptions and other exemptions of the authority. A resolution of the authority shall prescribe the purposes for which each subsidiary is formed.

(b) Each such subsidiary may sue and shall be subject to suit, provided the liability of each such subsidiary shall be limited solely to the assets, revenues and resources of such subsidiary and without recourse to the general funds, revenues, resources or any other assets of the authority or any other subsidiary. Each such subsidiary shall have the power to do all acts and things necessary or convenient to carry out the purposes for which such subsidiary is established, including, but not limited to: (1) Solicit, receive and accept aid, grants or contributions from any source of money, property or labor or other things of value, subject to the conditions upon which such grants and contributions may be made, including, but not limited to, gifts, grants or loans from any department, agency or quasi-public agency of the United States or the state, or from any organization recognized as a nonprofit organization under Section 501(c)(3) of the Internal Revenue Code of 1986, or any subsequent corresponding internal revenue code of the United States, as amended from time to time; (2) enter into agreements with persons upon such terms and conditions as are consistent with the purposes of such subsidiary; and (3) acquire, take title, lease, purchase, own, manage, hold and dispose of real and personal property and lease, convey or deal in or enter into agreements with respect to such property.

(c) Each such subsidiary shall act through its board of directors, not less than fifty per cent of whom shall be members of the board of directors of the authority or their designees.

(d) The provisions of section 1-125 of the general statutes, as amended by this act, and this section shall apply to any officer, director, designee or employee appointed as a member, director or officer of any such subsidiary. Neither any such persons so appointed nor the directors, officers or employees of the authority shall be personally liable for the debts, obligations or liabilities of any such subsidiary as provided in said section 1-125. Each subsidiary shall, and the authority may, provide for the indemnification to protect, save harmless and indemnify such officer, director, designee or employee as provided by said section 1-125.

(e) The authority or any such subsidiary may take such actions as are necessary to comply with the provisions of the Internal Revenue Code of 1986, or any subsequent corresponding internal revenue code of the United States, as amended from time to time, to qualify and maintain any such subsidiary as a corporation exempt from taxation under said Internal Revenue Code.

(f) The authority may make loans or grants to, and may guarantee specified obligations of, any such subsidiary, following standard authority procedures, from the authority's assets and the proceeds of its bonds, notes and other obligations, provided the source and security, if any, for the repayment of any such loans or guarantees is derived from the assets, revenues and resources of such subsidiary.

Sec. 84. (NEW) (Effective from passage) The state of Connecticut does hereby pledge to and agree with any person with whom the Health Information Technology Exchange of Connecticut may enter into contracts pursuant to the provisions of sections 82 to 85, inclusive, of this act that the state will not limit or alter the rights hereby vested in the authority until such contracts and the obligations thereunder are fully met and performed on the part of the authority, provided nothing contained in this section shall preclude such limitation or alteration if adequate provision shall be made by law for the protection of such persons entering into contracts with the authority.

Sec. 85. (NEW) (Effective from passage) The Health Information Technology Exchange of Connecticut shall be and is hereby declared exempt from all franchise, corporate business, property and income taxes levied by the state or any municipality, provided nothing in this section shall be construed to exempt from any such taxes, or from any taxes levied in connection with the manufacture or sale of any products which are the subject of any agreement made by the authority, any person entering into any agreement with the authority.

Sec. 86. Section 19a-25g of the 2010 supplement to the general statutes is repealed and the following is substituted in lieu thereof (Effective from passage):

(a) The Department of Public Health shall be the lead health information exchange organization for the state from July 1, 2009, to December 31, 2010, inclusive. The department shall seek private and federal funds, including funds made available pursuant to the federal American Recovery and Reinvestment Act of 2009, for the initial development of a state-wide health information exchange.

(b) On and after January 1, 2011, the Health Information Technology Exchange of Connecticut, created pursuant to section 82 of this act, shall be the lead health information organization for the state. The authority shall continue to seek private and federal funds for the development and operation of a state-wide health information

exchange. The Department of Public Health may contract with the authority to transfer unexpended federal funds received by the department pursuant to the federal American Recovery and Reinvestment Act of 2009, P.L. 111-05, if any, for the initial development of a state-wide health information exchange. The authority shall, within available resources, provide grants for the advancement of health information technology and exchange in this state, pursuant to subsection (f) of section 82 of this act.

[(b)] (c) The department shall facilitate the implementation and periodic revisions of the health information technology plan after the plan is initially submitted in accordance with the provisions of section 74 of public act 09-232, including the implementation of an integrated state-wide electronic health information infrastructure for the sharing of electronic health information among health care facilities, health care professionals, public and private payers, state and federal agencies and patients until December 31, 2010. On and after January 1, 2011, the Health Information Technology Exchange of Connecticut shall be responsible for the implementation and periodic revisions of the health information technology plan.

Sec. 87. Subsection (l) of section 1-79 of the general statutes is repealed and the following is substituted in lieu thereof (Effective from passage):

(l) "Quasi-public agency" means the Connecticut Development Authority, Connecticut Innovations, Incorporated, Connecticut Health and Education Facilities Authority, Connecticut Higher Education Supplemental Loan Authority, Connecticut Housing Finance Authority, Connecticut Housing Authority, Connecticut Resources Recovery Authority, Lower Fairfield County Convention Center Authority, Capital City Economic Development Authority, Connecticut Lottery Corporation and Health Information Technology Exchange of Connecticut.

Sec. 88. Subdivision (1) of section 1-120 of the general statutes is repealed and the following is substituted in lieu thereof (Effective from passage):

(1) "Quasi-public agency" means the Connecticut Development Authority, Connecticut Innovations, Incorporated, Connecticut Health and Educational Facilities Authority, Connecticut Higher Education Supplemental Loan Authority, Connecticut Housing Finance Authority, Connecticut Housing Authority, Connecticut Resources Recovery Authority, Capital City Economic Development Authority, Connecticut Lottery Corporation and Health Information Technology Exchange of Connecticut.

12.7 Appendix – List of References

- Aseltine, R H., et al. <u>Connecticut Physician Workforce Survey 2008: Final Report on Physician Perceptions and Potential Impact on Access to Medical Care</u>. Connecticut State Medical Society, 2008. 11.

- Hing, Esther, et al. <u>Electronic Medical Record Use by Office-based Physicians and Their Practices: United States, 2007</u>. National Health Statistics Reports. Number 23. March 31, 2010

- <u>Connecticut State Health Information Technology Plan</u>. Connecticut Department of Public Health. June, 2009.

- Jha, A.K. <u>Use of Electronic Health Records in U.S. Hospitals</u>. The New England Journal of Medicine. Volume 360: 1628-1638. Number 16. April 16, 2009.

- <u>Continued Progress: Hospital User of Information Technology</u>. American Hospital Association. 2007.

- Shaffer, VI, et al. <u>Predicts 2010: Health care Providers and Governments Seek the Benefits and Address the IT Implications of Electronic Health Records</u>. December 7, 2009. Gartner Industry Research G00173300.

- Connecticut Public Act 09-232 "An Act Concerning Revisions to Department of Public Health Licensing Statutes." July, 2009. http://www.cga.ct.gov/2009/ACT/PA/2009PA-00232-R00HB-06678-PA.htm

- Connecticut Public Act 10-117 "An Act Concerning Revisions To Public Health Related Statutes And The Establishment Of The Health Information Technology Exchange Of Connecticut." May, 2010. http://www.cga.ct.gov/2010/ACT/PA/2010PA-00117-R00SB-00428-PA.htm

- Health Insurance Portability and Accountability Act of 1996, P.L. 104-191, as amended from time to time, and contained in 45 CFR 160, 164

[1] See guidance on these domains in the Office of the National Coordinator (ONC) for Health Information Technology's *State Health Information Exchange Cooperative Agreement Program* issued in August 2009.

[2] Aseltine, R H., et al. Connecticut Physician Workforce Survey 2008: Final Report on Physician Perceptions and Potential Impact on Access to Medical Care. Connecticut State Medical Society, 2008. 11.

[3] Aseltine, et al.

[4] Hing, Esther, et al. Electronic Medical Record Use by Office-based Physicians and Their Practices: United States, 2007. National Health Statistics Reports. Number 23. March 31, 2010

[5] Hing, et al.

[6] Hing, et al.

[7] Hing, et al.

[8] Connecticut State Health Information Technology Plan (CT SHITP). Connecticut Department of Public Health. June, 2009.

[9] Jha, A.K. Use of Electronic Health Records in U.S. Hospitals. The New England Journal of Medicine. Volume 360: 1628-1638. Number 16. April 16, 2009.

[10] Continued Progress: Hospital User of Information Technology. American Hospital Association. 2007.

[11] Aseltine, et al.

[12] Hing, et al.

[13] CT SHITP

[14] Aseltine, et al.

[15] Based on the number of respondents to individual questions

[16] American Hospital Association.

[17] Aseltine, et al. 11.

[18] Shaffer, VI, et al. Predicts 2010: Health care Providers and Governments Seek the Benefits and Address the IT Implications of Electronic Health Records. December 7, 2009. Gartner Industry Research G00173300.

[19] Connecticut Public Act 09-232 "An Act Concerning Revisions to Department of Public Health Licensing Statutes", July, 2009. http://www.cga.ct.gov/2009/ACT/PA/2009PA-00232-R00HB-06678-PA.htm

[20] Connecticut Public Act 10-117 "An Act Concerning Revisions To Public Health Related Statutes And The Establishment Of The Health Information Technology Exchange Of Connecticut." May, 2010. http://www.cga.ct.gov/2010/ACT/PA/2010PA-00117-R00SB-00428-PA.htm

[21] CT SHITP

[22] Connecticut Public Act 09-232

[23] Connecticut Public Act 10-117

[24] Connecticut Public Act 10-117

[25] Health Insurance Portability and Accountability Act of 1996, P.L. 104-191, as amended from time to time, and contained in 45 CFR 160, 164

[26] ONC will negotiate with each state to determine best way to further specify this measure based on the Statewide directories and shared services pursued within each State under this program.

[27] Connecticut Health Database Compendium: A Profile of Selected Databases Maintained by the Connecticut Department of Public Health. Third Edition. March 2010